

THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

LARGEST NET PAID CIRCULATION IN THE FIELD

NOVEMBER
1946



THIS ISSUE

BIGGEST DRAGLINE IN NON-METALLICS MINERALS INDUSTRY

**Classifying Sand • Dump Body Delivery of Concrete
Sizing Riprap Mechanically • Concrete Mix Design**



Open view of the Williams "Slugger" Crusher showing heavy duty hammers, liners and discs.

**STEPPED-UP
PRODUCTION
AT LOWER OPERATING
COSTS**

CRUSHES and PULVERIZES IN ONE OPERATION

The **WILLIAMS "SLUGGER"**
CRUSHES "ONE-MAN" SIZE STONE
TO 1 1/4", 3/4" OR AGSTONE IN
ONE OPERATION

The Williams "Slugger" Crusher and Pulverizer now makes it possible to crush large pieces of stone weighing from 75 to 100 pounds to 1 1/4", 3/4" or agricultural limestone in one operation. Staging is eliminated. The unnecessary expense of a primary crusher is eliminated and the costly need for recrushing "overs" is eliminated. With seven sizes to choose from—all sturdily built for long lasting wear—every producer, whether large or small, can profitably install a Williams.

Design Features Include: Discs arranged so hammers can be set out as they wear on end; manganese steel breaker plates adjustable toward the hammers; front end is steel casting, 3 1/2 times stronger than cast iron; 1" thick manganese steel side cover liners.

**WILLIAMS PATENT CRUSHER AND
PULVERIZER CO.**

800 St. Louis Ave.

St. Louis (6), Mo.



REG. U.S. PAT. OFF.

WILLIAMS
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
WILLIAMS
PATENT CRUSHERS GRINDERS SHREDDERS

A development of
B.F. Goodrich
FIRST IN RUBBER



Man missing

A typical example of B. F. Goodrich development in rubber

THE man who *isn't* in the picture is the important part of this story. He's the maintenance man who used to spend long hours—and many dollars—repairing the drives on oil pumps like this one in a southern power plant. They had two pumps for each generator because they knew that breakdowns were inevitable. And if oil failed to reach the generator bearings, thousands of people would be without light and power.

They thought of replacing the noisy, hard-to-maintain gear drives with V-belts something like the one that drives the fan in your car. Many years ago

B. F. Goodrich developed the very first V-belt for just that purpose. V-belts are strong, quiet and need very little attention once they're installed. But they do stretch slightly. And there was no way to take up more than a fraction of an inch stretch on these drives.

Then the superintendent heard of the B. F. Goodrich wire grommet V-belt. In it, two endless steel cables—called grommets—are embedded in abrasion-resistant rubber. This belt was developed by B. F. Goodrich for heavy duty service where low stretch and high flexibility were needed. A test set was installed on one of the

drives a year and a half ago. These belts have run 24 hours a day since then *with absolutely no stretch—and absolutely no maintenance.* Now, the rest of the drives are being equipped with grommet belts. That's why the man is missing from the picture. They don't need him on that job any more—a typical result of the steady improvement that is being made in rubber products by B. F. Goodrich research. *The B. F. Goodrich Co., Industrial Products Division, Akron, Ohio.*

B.F. Goodrich
RUBBER and SYNTHETIC products



ROCK PRODUCTS

NOVEMBER, 1946

VOL. 49, NO. 11

THE INDUSTRY'S
RECOGNIZED AUTHORITY

Bror Nordberg
Editor

Charles Hoefer, Jr.
Manager

Nathan C. Rockwood
Editorial Consultant

This Month

Generally Speaking	40-43
Tampering With Demand Upsets Apple Car	45
Rocky's Notes—The "Industrial Republic"	47
Washington News	49
The Personal Side of the News	49
The Personal Side of the News	
News of the Industry	55
Hints and Helps	58
New Machinery	60
Fourteen Classifiers on Sand Dredge	
Stewart Sand and Material Co., equips dredge with two banks of seven hindered settling classifiers	
"Bigger Digger"—An Electronic Hercules	64
Walking dragline operated by International Minerals and Chemical Corporation both strips overburden and excavates phosphate matrix	
James A. Barr, Jr.	66
Producing Riprap Mechanically	
Bussen Quarries, Inc., produces riprap with jaw crusher set for 9-in. opening and slow feed and screen with large opening	
H. E. Swanson	68
Minnesota's Wide Range of Minerals	
Glacial deposits and outcrops of both sedimentary and igneous rocks are easily reclaimed	
H. E. Swanson and Nathan C. Rockwood	70
Air-Entrained Concrete Delivered in Special Haulage Units	
Kolinski Concrete Co., Milwaukee, Wis., has batching plant with unusually large bin capacity for various aggregates and cements	
E. R. Cushing	82
Labor Relation Trends	
Nathan C. Rockwood	84
Movable Hopper-Conveyor Reduces Haulage	
Bellevue Sand and Gravel Co., moves to new deposit on other side of plant. Pit operations resemble quarry practice	
H. E. Swanson	85
Raw Mix Blending Calculated Graphically	
Method developed by Puerto Rico Cement Corporation saves time and requires only simple arithmetic	
Jose E. Berrocal	87
Automatic Batching of Sacked Dry Mixes	
Harry T. Campbell Sons' Corporation adds four dry mixed concrete products, and two power industry materials	
Robert F. Porter and Arthur C. Avril	88
Instrumentation and Control of the Vertical Kiln	
Simple system of controls for small operation and more complex instrumentation for larger plants	
Victor J. Azbe	90
Fuel Economy with Slurry Dryer	
Slurry dryer designed to reduce fuel consumption to 90 lb. coal per barrel of clinker and cut down dust losses	
Naavard Kronstad	94
Rapid Handling of Block to Curing Rooms and Storage	
Burnet & Craig, Houston, Texas, designs concrete products plant with two machines set up in tandem	
M. W. Messer	121
Mortar Cement with Air-Entrained for Water-tight Block	123

Ralph S. Torgerson, Managing Editor
H. E. Swanson, Associate Editor
E. R. Cushing, Associate Editor
M. K. Smith, Assistant Editor

Contributing Editors

Victor J. Azbe
Dr. F. O. Anderegg
M. W. Loving
James A. Barr, Jr.

H. M. Goodenow, Dir. of Circulation
C. P. Teats, Field Representative
M. A. Cotter, Circulation Service
D. J. Devonald, Display Adv. Service
R. P. Keino, Classified Adv. Service
Thornell Barnes, Director of Research
Milton M. Myers, Art Director
C. M. Hancock, Production Manager

District Offices

Eastern Area—E. H. St. Jules, Manager; John F. Lockitt, Assistant, 522 Fifth Ave., New York 18, Tel. Murray Hill 2-7888.

Central Area—F. S. Ruggles, Manager, Hanna Bldg., Cleveland 15, Tel. Main 4362.

Midwest Area—M. B. Nylund, Manager, 309 W. Jackson Blvd., Chicago 6, Tel. Harrison 7890.

Western Area—L. C. Thaon, Manager, 309 West Jackson Blvd., Chicago 6, Tel. Harrison 7890.

Pacific Area—Duncan Scott & Co., Mills Bldg., San Francisco 4, Tel. Sutter 1393. In Los Angeles 13, 408 Pershing Square Bldg., Tel. Michigan 6203.

London, England—Ernest R. Gauley, Managing Director, Maclean-Hunter, Ltd., Sun Life of Canada Bldg., 2 Cockspur St., London, S. W. 1.

ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 309 West Jackson Blvd., Chicago 6, Illinois; Horace T. Hunter, President; John R. Thompson, Vice President; J. L. Frazier, Secretary. Copyright, 1946. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill. post office under the act of Mar. 3, 1879. Additional entry at Milwaukee, Wis.

SUBSCRIPTION INFORMATION

Subscription Price: United States and Possessions, Mexico, Cuba, Canada, \$2.00; and \$4.00 foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index. Canadian subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal "A," Toronto, Canada.

To Subscribers—Data on wrapper indicates issue with which your subscription expires...in writing to have address changed, give old as well as new address.



You Engineered It... WE PUBLISHED IT!

125 practical up-to-the-minute ways to reduce wear on earth-working and processing equipment!

The NEW

STODDY HARD-FACING GUIDEBOOK for welders, production foremen and superintendents

WHEN you get this complete treatise on the best hard-facing procedures—judged by results obtained in a nationwide search—you eliminate all hard-facing guess-work, all trial and error and considerable unnecessary expense! The new Stoddy Hard-Facing Guidebook is a compilation of outstanding methods employed by present day industry to protect equipment against preventable wear! Each application has been developed by operators themselves and is proved in actual use. Only when it has produced superior results, longer life or greater operating efficiency has an application been accepted for publication in the new Stoddy Guidebook.

QUICK, COMPLETE INFORMATION

Facts are brief, condensed—yet packed full of information on type and average amount of rod required, correct hard-facing procedure and benefits obtained from hard-facing.

EXPLANATORY DRAWINGS

show where and how to apply hard metal in most economical manner, yet produce greatest life increase.

WIDE VARIETY OF INDUSTRIES COVERED

Complete chapters are devoted to brick and clay equipment, rock products, metal mining, coal mining, construction, dredging, etc. These industries employ dozens of varied pieces of earth working and processing machinery, life of which can be greatly prolonged with Stoddy Hard-Facing alloys.

WHY YOU NEED THE STODDY HARD-FACING GUIDEBOOK

The guidebook is a summary of your most successful hard-facing experiences. These applications have been contributed by hundreds of users of earth working and processing equipment from all over the nation, and are presented in book form. All gamble has been eliminated. One suggestion alone applied to your own equipment may easily pay off hundreds of dollars in savings per year!

STODDY COMPANY

1129 W. SLAUSON AVE., WHITTIER, CALIF.

STODDY HARD-FACING ALLOYS

Retard Wear Save Repair

STODDY HARD-FACING GUIDEBOOK CONSTRUCTION

Page 23

NAME OF PART	TYPE OF ROD AND AMOUNT REQUIRED	HARD-FACING PROCEDURE	BENEFITS OF HARD-FACING	EXPLANATORY DRAWINGS
TRUCKWHEELS (Ball-bearing)	3/16" Coated Stoddy Self-Hardening. AMOUNT OF MATERIAL 1 to 2 lbs. of Coated Stoddy Self-Hardening will harden a wheel of 1 to 2 tons depending on extent of wear.	Remove bearings from truck and back of wheel. Apply Self-Hardening to wear area and pass to sleep. Run the wheel back, pass and sleep will build up to size. Rough grind.	Hard-faced truck wheels will reduce as much as 2 ordinary truck wheels.	 STODDY SELF-HARDENING
CRUSHER JAWS	3/16" to 1/4" diameter Coated Stoddy Self-Hardening. AMOUNT OF MATERIAL (One 3/16" Jaw). WORN JAWS 20-30 lbs. Coated Stoddy Self-Hardening. NEW JAWS 20-30 lbs. Bare Electrode Stoddy Self-Hardening.	WORN JAWS Should clean to within 1/16" of new using Coated Stoddy Self-Hardening. Pass down points of wear and flush with new layer Self-Hardening. Should 3 above quantity of bands. NEW JAWS Follow same procedure as for hard-facing worn jaws.	This method of application provides an increase in service life of approximately 50% over expected life. The operation can be repeated many times.	 STODDY SELF-HARDENING
SHOVEL DRIVING TUBES	3/16" diameter Stoddy High Carbon Electrode Stoddy Self-Hardening. AMOUNT OF MATERIAL 8 inches from a 3/16" rod, about 1/16" to 1/8" of Stoddy High Carbon Electrode (depending on wear) will harden 10 to 15 lbs. of Coated Stoddy Self-Hardening.	Hard face driving tubes after wear has been removed. Leave tubes for operation. Shaking it up as the welding operation. Should be within 1/16" of new. Use Stoddy High Carbon Electrode. Finish with 1/16" layer Coated Stoddy Self-Hardening. This material must be properly distributed.	Driving truck wheels on ball and hard-faced entire new truck wheels about 2 to 1.	 STODDY HIGH CARBON STODDY SELF-HARDENING

WRITE FOR YOUR FREE COPY TODAY!

There is no charge or obligation—simply fill in the coupon and send your name, title and mailing address on your letterhead. Your guidebook will be rushed to you immediately!

Here is complete, up-to-date hard-facing information on maintaining your wearing equipment. No tedious reading, no unproven theories. Clear, easy-to-understand illustrations. The new guidebook pages are chock full of equipment-saving applications, using Stoddy Hard-Facing alloys. This page is typical of those you'll see in the new Stoddy Hard-Facing Guidebook.

Please send my FREE guidebook immediately!

NAME.....
TITLE.....
COMPANY.....
ADDRESS.....
CITY.....STATE.....

**A SLOW, POWERFUL
PISTON - PUNCH
GIVES YOU LOW-COST AIR POWER!**

Get the New

SULLIVAN

Series 80

PORTABLE AIR COMPRESSORS

**2-Stage
Compression**

Automatic
"ECONO-MISER"
Load Control

**100 P.S.I.
WORKING
PRESSURE
IN THE MOST
COMPACT PORTABLE
AIR PLANT YOU
HAVE EVER SEEN**

*Consult a
Joy Engineer*

*Write
for bulletin
today!*

SULLIVAN

PORTABLE AIR COMPRESSORS FROM 60 TO 630 CFM

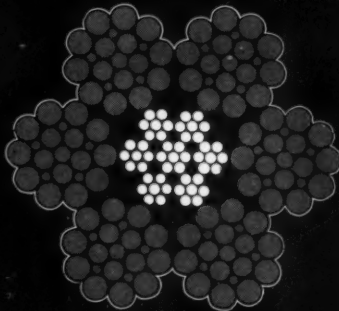
W&D C492



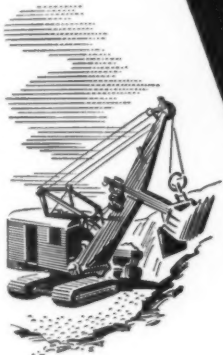
**SULLIVAN DIVISION
JOY MANUFACTURING COMPANY**

General Office: Henry W. Joyer Bldg., Pittsburgh, Pennsylvania

Resists Abuse Better...



UPSON-WALTON IWRC* WIRE ROPE



FOR winch lines on trucks and tractors . . . for hoist lines on power shovels and in-haul ropes on draglines . . . for hot ladle cranes in steel mills and foundries . . . for cable scrapers, stump pulling ropes, rotary drilling lines for oil wells, mining machines—industry after industry operates under conditions which require IWRC (*Independent Wire Rope Center) construction to do the best job.

IWRC construction resists crushing better where ropes crosswind on drums, retains its circular cross section when bent around small sheaves and drums under extra heavy loads. It resists stretching, resists heat and increases the ultimate strength of the rope itself.

IWRC construction is available in every type of wire rope made by Upson-Walton.

For best performance, select the U-W rope best suited to your needs and specify *IWRC, Perfection Grade, Layrite Preformed*.



Established 1871

*All Upson-Walton Products Available
Through Your Local Upson-Walton Distributor*

Copyright 1946—The Upson-Walton Company

THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks

MAIN OFFICES AND FACTORY: CLEVELAND 13, OHIO

114 Broad Street
New York 4

737 W. Van Buren Street
Chicago 7

241 Oliver Building
Pittsburgh 22



What is YOUR Hauling Job?

The chances are,
it can be profitably handled with
MISSISSIPPI WAGONS

In every part of the country, versatile MISSISSIPPI WAGONS are cutting costs and increasing profits for owners, on many different types of hauling operations.

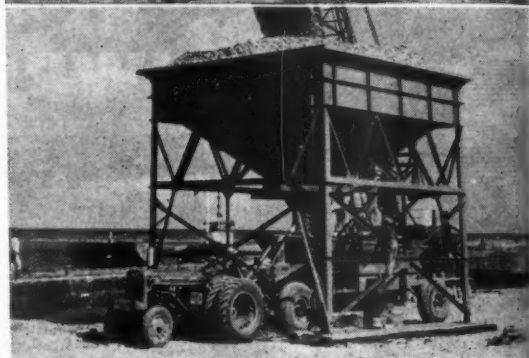
Road, airport and levee construction; state and county highway maintenance; ON or OFF-the-highway hauling of dirt, gravel, sand, rock, coal, ore, slag, aggregates and industrial minerals . . . these are some of the assignments on which Mississippi Wagons have proved their ability to deliver cheaper yardage under a wide variety of operating conditions.

Whatever your hauling problem, it will pay you to investigate the profit possibilities offered by Mississippi Wagons. Your nearby distributor will be glad to furnish facts and figures.

M-R-S MANUFACTURING COMPANY
JACKSON, MISSISSIPPI, U. S. A.



The World's Most Modern Hauling Unit



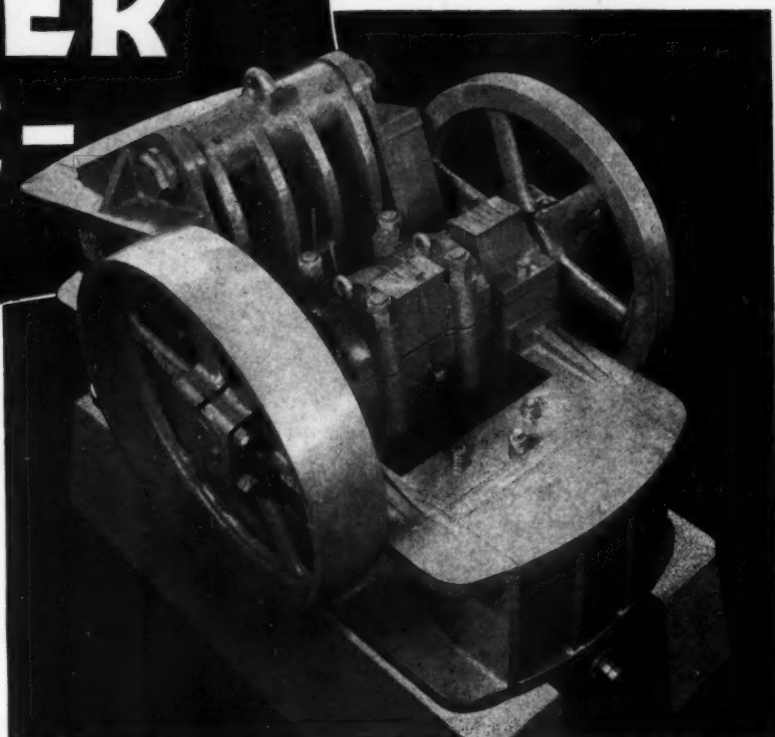
The pictures above show Mississippi Wagons being loaded with (1) dirt, on a drainage project in California, (2) phosphate rock, on a mining operation in Idaho, (3) oyster shell, on an airport construction job in Mississippi, (4) pit gravel, on a road-building job in Texas.

WHAT YOU WANT IN A **CRUSHER** IS **HERE—**

• **BRUTE STRENGTH**

• **MAXIMUM
PRODUCTION**

• **RIGHT SIZE
OF PRODUCT**



WE BUILD

Jaw, Gyratory and
Reduction Crushers
Crushing Rolls
Grinding, Ball, Tube
and Rod Mills
Rotary Kilns,
Coolers and Dryers
Grizzlies and Feeders
Classifiers
Samplers and Jigs
Furnaces
Settlers
Crucibles
Forehearths
Casting Machines
Complete Milling and
Smelting Plants

Traylor Type H Jaw Crushers have superior strength and are built to stand up under hard use day after day.

Into Type H Crushers go the more than ten years of technical skill and practical experience, of our engineers, which assures the best design for continuous and maximum production.

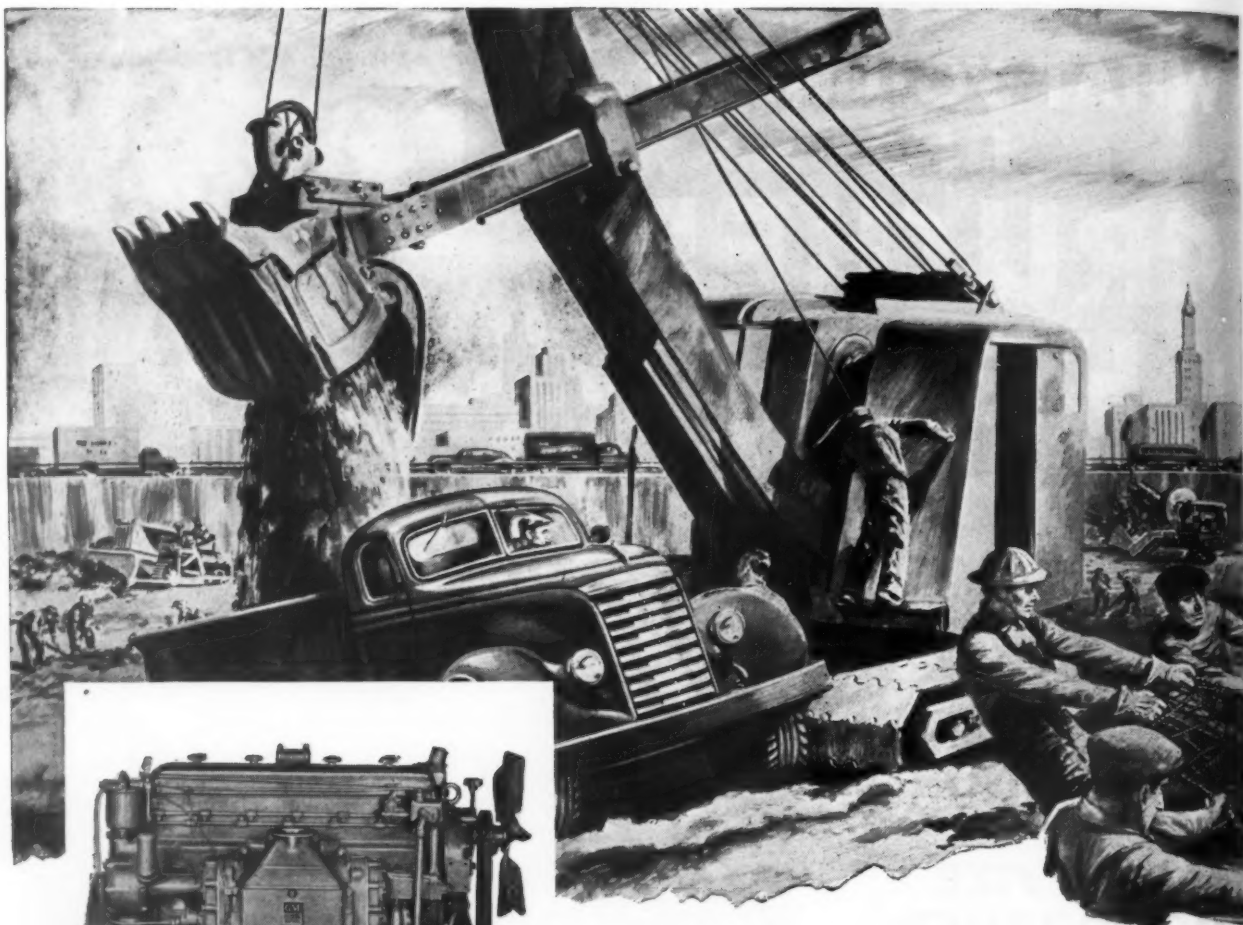
The special features, built into this crusher to reduce wear and save on power, promote economy of maintenance and operation, and also result in the highest efficiency in capacity and size of product.

Here are just a few of its salient features:—All-welded steel frame—Cast Steel Swing Jaw and Pitman—Improved Swing Jaw Suspension—Non-Choking curved Jaw plates of Manganese Steel.

The Type H Crusher is built in fifteen sizes—from 8" x 12" to 56" x 72"—covering practically every requirement.

For complete details write for Bulletin #2105 or ask our representative to call at your convenience.

TRAYLOR
ENGINEERING & MANUFACTURING CO.
MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.
NEW YORK CITY
3416 Empire State Bldg.
EXPORT DEPARTMENT
104 Pearl St., New York City
CHICAGO
2051 One La Salle St. Bldg.
CANADIAN MFRS.—CANADIAN-VICKERS, LTD.
P.O. Box 550 Place D'Armes Station, Montreal, Canada
LOS ANGELES
919 Chester Williams Bldg.



CONTRACTORS— *For Great Diesel Power* check into big construction jobs

CONSTRUCTION calls for power in all kinds of equipment—tractors, trucks, cranes, graders, earth-movers. It calls for power that stays on its feet, pinches pennies on fuel and needs little attention.

This is why you find more and more construction equipment powered with General Motors Series 71 Diesel engines.

Being 2-cycle, in which every downward piston stroke is a power stroke, these engines pick up their load fast. They are

powerful yet compact, making Diesel stamina and savings available to countless users of power who haven't been able to consider it before because of engine size.

* * *

So whatever needs for power you may have in road-making machinery, crushers, shovels or any other construction equipment—look to GM Diesels.

DETROIT DIESEL ENGINE DIVISION

DETROIT 23, MICH. • SINGLE ENGINES . . . Up to 200 H.P.
MULTIPLE UNITS . . . Up to 800 H.P.
GENERAL MOTORS



Features of GM Diesels Important to Every User of Power

- QUICK TO START**—on their own fuel
- ECONOMICAL**—run on low cost fuel
- EASY TO MAINTAIN**—clean design plus accessibility
- LESS FIRE HAZARD**—no volatile explosive fuel
- COMPACT**—readily adaptable to any installation
- SMOOTH OPERATION**—rotating and reciprocating forces completely balanced
- QUICK ACCELERATION**—2-cycle principle produces power with every downward piston stroke

NOW

a great NEW tire to meet a great service need

**LONG-LIFE SERVICE OFF THE ROAD
and LONG MILEAGE ON THE HIGHWAY !**

THIS is the new Road Lug tire — made to order by Goodyear for tough service operations demanding a tire built to go in OFF the road, bring out the load, then take the haul ON the highway.

In test after test — in strip mines, in rugged timber country, on tough access roads, and under punishing loads over the highway — this great husky *proved* brute enough to stand the gaff and gouging OFF the road, and roll up new mileage records ON the road. It *averaged* 33% longer tread wear and 25% longer tire life.

The reasons why are many. They include the specially designed tread that gives good traction and cut resistance OFF the road, and smooth rolling, longer mileage ON the highway. And they include heat-resistant, extra-strong rayon cord body which provides added stamina and bruise resistance in this great hauler.

See your Goodyear dealer now for full data on the NEW Road Lug — the tire that will give you new performance standards, and another big reason why *"more tons are hauled on Goodyear truck tires than on any other kind."*

Road Lug—T.M. The Goodyear Tire & Rubber Company

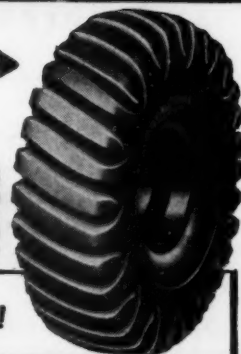
GOOD YEAR

Road Lug Tire

— tough running mate for Goodyear's famous

HARD ROCK LUG

which is still the world's toughest work tire for straight brutal off-the-road service.



BUY and SPECIFY GOOD YEAR — it pays!



SEE YOUR CHEVROLET DEALER

HE CAN SUPPLY YOU WITH CHEVROLET STANDARD TRUCKS
AND SPECIAL EQUIPMENT FOR ANY HAULING JOB

Chevrolet produces 99 models on 9 wheelbases—with a range of standard bodies and payload capacities that covers the needs of the great majority of users. To meet special hauling requirements, your Chevrolet dealer can supply you with special bodies and equipment that extend the range of usefulness and payload capacity of Chevrolet trucks and tractor-trucks up to the maximum permitted by law.



THERE'S A CHEVROLET TRUCK TO DO YOUR *HAULING JOBS*

99 MODELS ON 9 WHEELBASES

Newly added models, of greater payload capacity than in previous years, now make available Chevrolet's famous operating economy, low upkeep and low first-cost to a still greater range of users in the heavy hauling field. Chevrolet trucks formerly classed as heavy-duty models are now Chevrolet medium-duty models; the new models that now make up Chevrolet's heavy-duty class com-

prise five series, with five wheelbases (from 109 inches to 160 inches), and include both conventional and cab-over-engine types. All are equipped with vacuum-power brake boosters and with new wide-base-rim wheels.

Operators of trucks in extra-heavy hauling jobs will cut costs three ways by using these massive Chevrolets . . . for they cost less to buy, less to run, less to keep.

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN

CHEVROLET TRUCKS



PICK-UPS



PANELS



STAKES



CAB-OVER-ENGINE



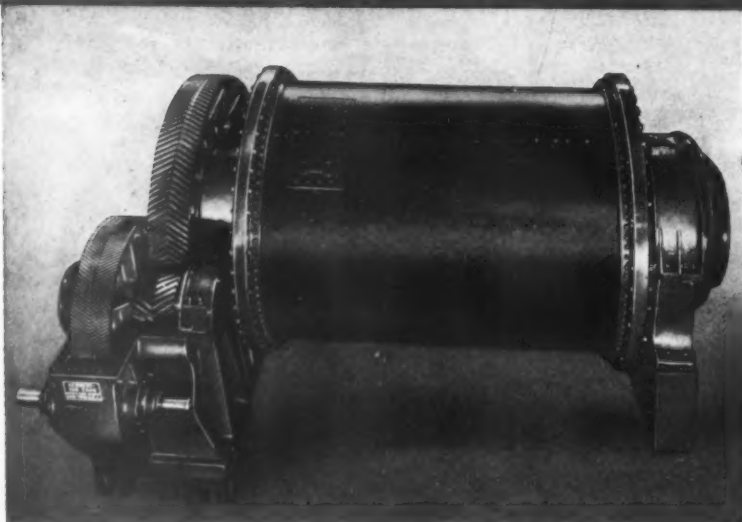
TRACTOR-TRUCKS AND CHASSIS FOR SPECIAL EQUIPMENT



99 MODELS • 9 WHEELBASES • THE RIGHT TRUCKS FOR ALL TRADES

KENNEDY

gives you



**WE MANUFACTURE
MACHINERY FOR A
COMPLETE CEMENT
PLANT . . .**

KENNEDY INTEGRAL GEAR DRIVEN TUBE MILL

The new KENNEDY Integral Gear Drive for Tube Mills can be used on Combination Ball Mills, Wet Grinding Tube Mills, Dry Grinding Tube Mills and Air Swept Tube Mills. It is impossible to mis-align these gears because the gear housing supports both the discharge end of the mill and the roller bearings carrying the gears. All bearing seats are machined in a jig at the factory to a tolerance of $3/1000$ of an inch. The assembly of the gear is exactly the same as the reduction gears which everyone knows is the correct way of transmitting power. Thus we save approximately 10% in power over other best well-known types of tube mill gear drives, which means that one can obtain 10% greater production from a given size Kennedy tube or ball mill with a given size motor.



KENNEDY ROTARY KILN

10' x 9' x 250'

Mounted on 4 riding rings. These kilns can be built in any diameter or length desired. We are prepared to furnish complete cement plants and mining plants.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

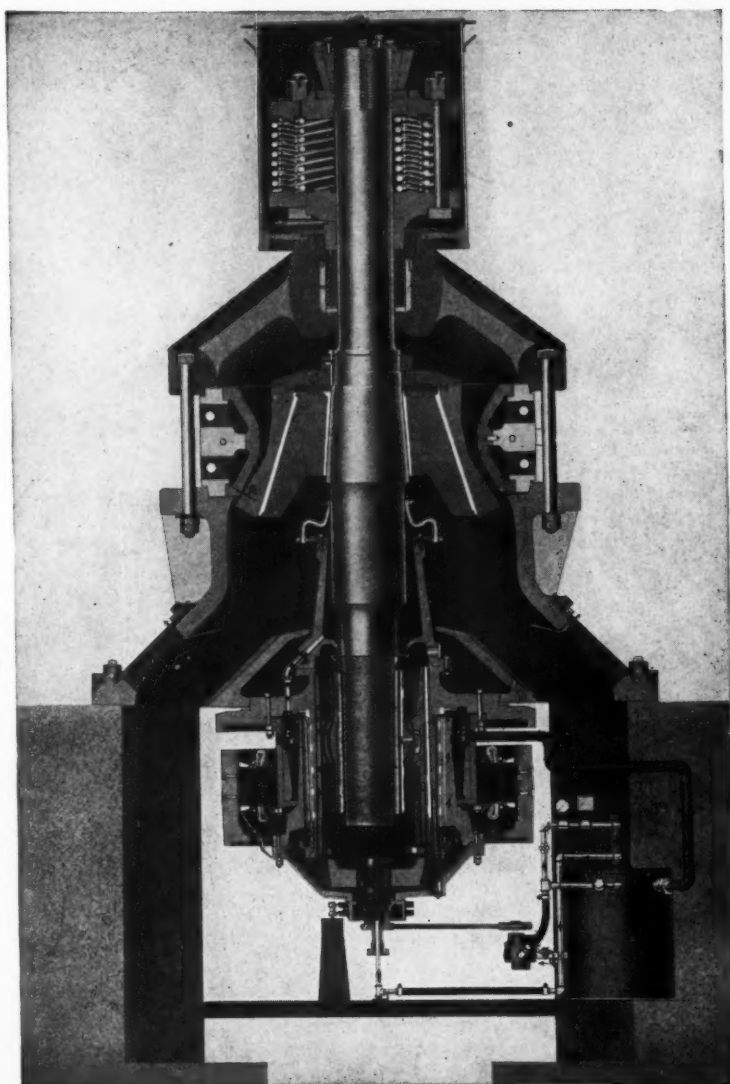
Efficient, Reliable Performance!

A #49½

KENNEDY ROLLER BEARING GEARLESS CRUSHER

with a Synchronous Motor built in its pulley. This machine shows **80% saving in the cost of maintenance** and a saving of **50% in power** over geared crushers. It has produced 156 tons per hour when set to 7/16" between the head and concaves at the bottom.

Write for information on KENNEDY Roller Bearing Gearless Standard and Secondary Crushers, Jaw Crushers, etc.



We also manufacture Vibrating Screens and Belt Conveyors. Write for Catalogue and description.

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

when you buy a crushing p

1 The Cedarapids Master Tandem—100 to 150 tons per hour of 1" material are easy for this big gravel crushing plant. 10" x 36" jaw crusher, 40" x 22" roll and 48" x 12' double-deck horizontal vibrating screen. Ask for Bulletin MT-1.

2 The Cedarapids Junior Tandem—Similar to the Master Tandem but smaller in size. 10" x 24" or 10" x 36" jaw crusher, 24" x 16" roll and 36" x 10' double-deck horizontal vibrating screen. Ask for Bulletin JT-2.

3 Cedarapids Junior Tandem and Portable Primary—The addition of a Cedarapids Portable Primary quickly converts a Master, Junior or Pitmaster to a quarry plant.

4 Cedarapids Hammermill Plant—Here's one of the newest Cedarapids portable plants with a 4033 Cedarapids Hammermill for producing agstone and roadstone. Ask for descriptive literature.

5 Cedarapids Pitmaster Straightline—This is our smallest portable straightline plant... 10" x 16" jaw crusher, 16" x 16" roll and 30" x 9'6" double-deck horizontal vibrating screen. Ask for Bulletin PS-1.

6 Cedarapids Unitized Plant—Here's the most versatile, portable crushing, screening and washing plant ever offered because it fits *all* aggregate production requirements from riprap stone to agstone with almost any desired capacity. Ask for Bulletin Unit-1.

IOWA DEALERS

Iowa Dealers are qualified by training and experience to help you get real low-cost production in your crushing, screening and asphalt mixing operations—to recommend and sell the equipment that will enable you to meet the strictest specifications at a good profit—and service your equipment to assure the minimum of lost time. There's a Cedarapids dealer in almost every important city ready for your call.

IOWA MANUFACTURING

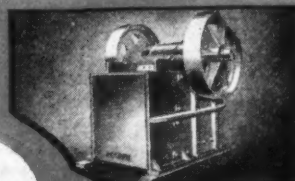
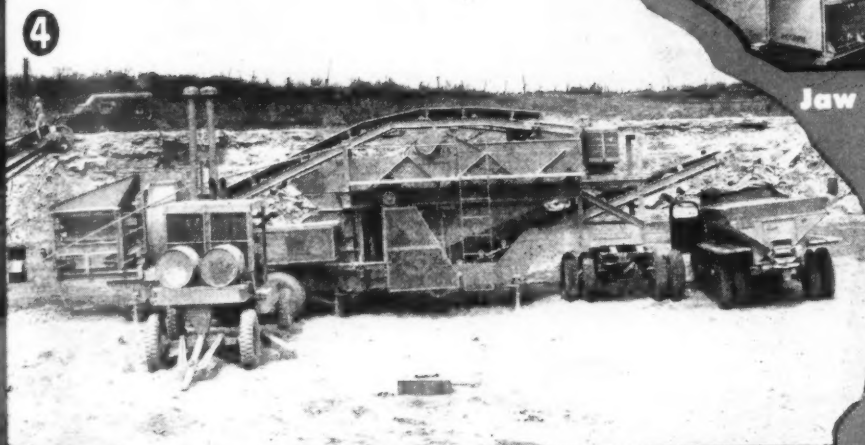
CEDAR RAPIDS, IOWA, U. S. A.

plant . . .

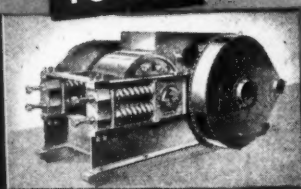
Buy the Best..

... Buy
Cedarapids

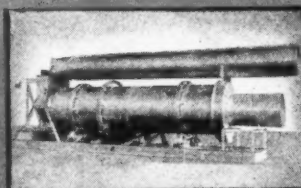
Built by
IOWA



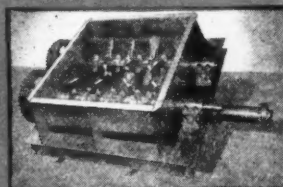
Jaw Crushers



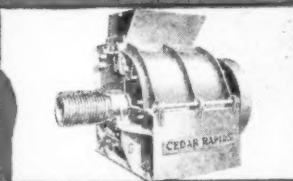
Roll Crushers



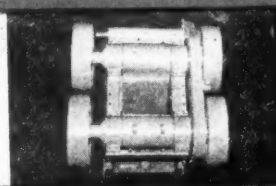
Driers



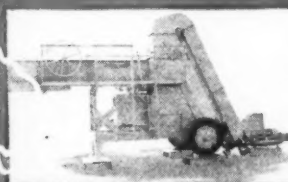
Pug Mills



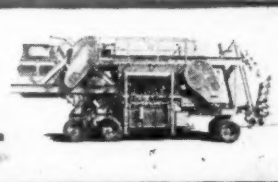
Hammermills



Twin Jaw Crushers



**Patchmaster
Asphalt Plant**



**Model "F"
Asphalt Plant**

COMPANY

Iowa also makes a complete line of portable and stationary batch type and continuous mix type asphalt plants and equipment. For the best in asphalt mixing equipment—Buy Cedarapids.

How *Bucket Loaders* screen to size while loading..

• Screening and loading become one continuous operation with the Barber-Greene Bucket Loader. One machine and one operator do the entire job. The double deck vibrating screen operates right on the loader and moves with the loader, requiring no change of set-up as the working face progresses.

In addition, bank run material is loaded at the time and in the quantities actually needed.



There are no piles of screened material scattered around to be run over by trucks and lost.

Barber-Greene Bucket Loaders, built in several different models and sizes, are designed to operate with scalping and vibrating screens and other accessories. Write for Catalog No. 82, which illustrates and describes the mechanical features of the loaders and their accessories. Barber-Greene Company, Aurora, Illinois.



CONSTANT FLOW EQUIPMENT



LOADERS



PERMANENT CONVEYORS



DITCHERS



PORTABLE CONVEYORS



FINISHERS



BITUMINOUS PLANTS



COAL MACHINES



Processing Non-Metallics in One Operation

... with the Raymond Roller Mill equipped with air separation and air drying.

This modern method is automatic, dustless and continuous ... no separate dryers or conveyors required.

Limestone, gypsum, shale, kaolin, barytes, phosphate rock, dolomite, charcoal, graphite, iron oxide and various clays are typical of the products that may be handled.

Raymond builds a complete line of grinding units for every requirement ... High Side Roller Mills for extreme fine grinding ... Low Side Roller Mills for medium commercial grinding ... Midget Mills for small output ... and Super Mills for capacities up to 40 tons per hour.

Write for detailed information.

Raymond Pulverizer Division

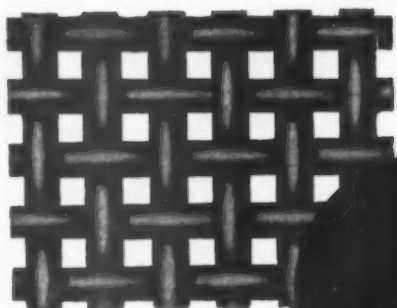
COMBUSTION ENGINEERING COMPANY, INC.

1307 North Branch Street

CHICAGO 22

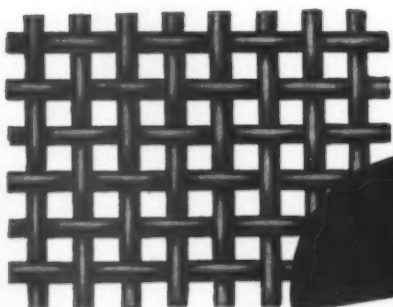
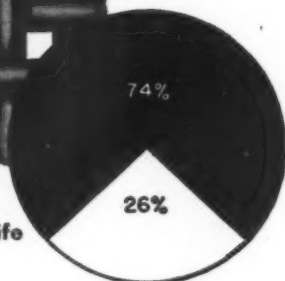
Sales Offices in Principal Cities In Canada: Combustion Engineering Corporation, Ltd., Montreal

AS *Circumstances* DEMAND



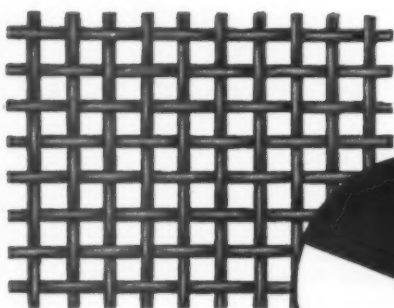
Slow Screening—

Long Life



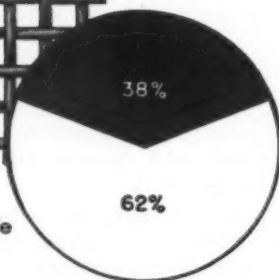
Faster Screening—

Shorter Life



Rapid Screening—

Short Life



Obviously no one type of wire cloth will fill every industrial requirement. The solution to any wire cloth problem lies in a full analysis of the conditions under which the screen is to be used and the manufacture of a screen that meets the specific need.

If you have a problem involving wire cloth we can probably answer it, for during the past 87 years Wissco and Calwico Wire Cloth have been meeting the needs of over 100 industries.

Our service covers the precision fabrication of wire cloth in a dozen different weaves. And whether you use wire cloth for screening, filtering, grading, cleaning or processing, you'll find Wissco and Calwico Wire Cloth will give long, dependable service. Made in all commonly used metals, these famous brands are designed to withstand chemical action, corrosion, abrasion, moisture or high temperature.

Our engineers are ready to help solve your wire cloth problems. Just write to our nearest office.

Free Book on Wire Cloth

Contains 151 illustrations, charts, diagrams, tables of wire sizes, meshes and weights. For your copy write Mechanical Specialties Dept., Wickwire Spencer Steel, Sterling St., Clinton, Mass.



WISSCO *Wire Cloth* **CALWICO**

East of the Rockies it's **WISSCO**
WICKWIRE SPENCER STEEL DIVISION
STERLING ST., CLINTON, MASS.



On the Pacific Coast it's **CALWICO**
THE CALIFORNIA WIRE CLOTH CORP.
1001 22ND AVE., OAKLAND, CAL.

EASY CUTTING!



NEW

6", 7" and 8"
SIZES

Now in Production
AT OUR AURORA PLANT

Thor

PORTABLE ELECTRIC SAWS DO BETTER WORK . . . EASIER and FASTER

You get plenty of speed and power—*plus smooth operation*—in Thor's new Portable Universal Electric Saws. For industrial maintenance work or hundreds of other types of carpentry—they are real time and labor savers. All-ball-bearing design assures long, satisfactory service. Automatic telescopic guard gives full protection to operator. Natural, firm hand hold provides complete control.

Demonstrate this handy, efficient tool to your own satisfaction—ask for one now.

INDEPENDENT PNEUMATIC TOOL CO.

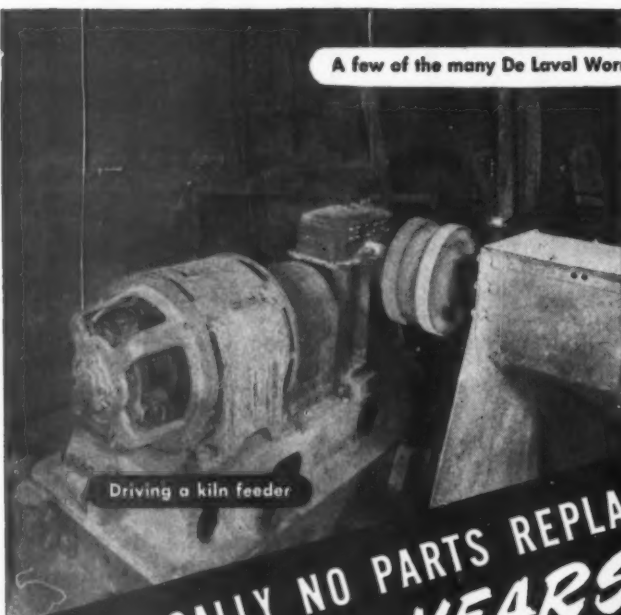
600 W. Jackson Blvd., Chicago 6, Ill.

Birmingham Boston Buffalo Cleveland Detroit Los Angeles Milwaukee New York
Philadelphia Pittsburgh St. Louis Salt Lake City San Francisco Toronto, Canada London, England

Thor **PORTABLE POWER.**
TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

A few of the many De Laval Worm Gear Reducers used in this plant



Driving a kiln feeder



Driving a kiln

PRACTICALLY NO PARTS REPLACEMENTS
in 19 YEARS

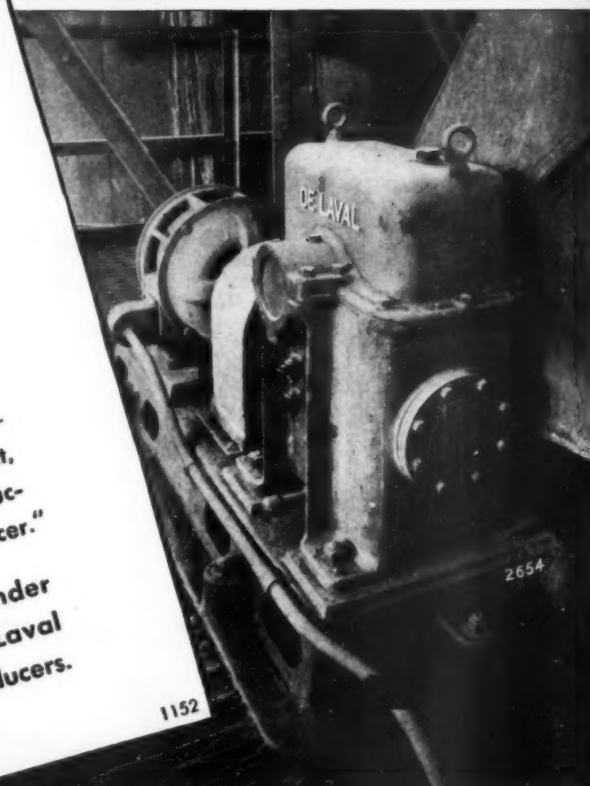
Reported by Plant Employing Many De Laval Worm Gear Speed Reducers

How's that for Reliability?

De Laval Worm Gear Speed Reducers have given such good service in a certain cement mill (name furnished on request) that the Plant Superintendent has written of their performance:

"There are about 175 reducers of various sizes in operation in this plant on a wide diversity of jobs; and during the last eighteen or nineteen years, since the original ones were installed, we have had to make practically no replacements of worms, wheels or bearings. In fact, there has never been any interruption in production by reason of the failure of a speed reducer."

For reliable, trouble-free service under severe conditions, specify De Laval Worm Gear Speed Reducers.



1152



WORM GEAR DIVISION

DE LAVAL


STEAM TURBINE COMPANY · TRENTON 2, NEW JERSEY




From Portland, Ore. to Portland, Me.

ST. REGIS FIELD ENGINEERS


can give you
expert aid on
packer problems




J. H. "SHORTY" DEACON . . . Shorty was born in the heart of the area where lime is produced, and it has been in his blood ever since. Before coming to St. Regis in 1919 he was superintendent of a lime company. He has covered the country as a field engineer and now operates from our Toledo office as an expert on the packaging of hydrated lime. He's a whiz at rummy, too.



C. F. "CLARENCE" HAUSEN . . . started with St. Regis in 1926 and now makes his headquarters in the Chicago office. During his years with us he has developed quite a reputation as an authority on several packers. These machines are his hobby, too, but he finds time for a game of cards now and then.



W. W. "BILL" THOMAS . . . Bill has spent most of his 50 years in the Lehigh Valley, so he knows plenty about its industries. Before joining St. Regis in 1926 he supervised construction work at several cement plants in that area. Since then, working out of the Nazareth office, he has specialized on installing and modifying packers to meet a wide range of requirements. In his spare time he's quite a chicken farmer.



G. E. "GEORGE" HUNT . . . In his pre-St. Regis days he carried his Texas drawl through the South in the interest of the rock products industry. Since 1932 he has still "lived" with his rock products friends, but as one of the top-notch service engineers on St. Regis packers. Birmingham, Ala., is his base, from which he covers the South.

H. S. Hangen,
Director

Lehigh Valley Area

G. W. Leopold, Manager
F. T. Honeyman
W. W. Thomas
C. H. Rodgers
J. H. Dively
Eugene Moore

Southern States Area

H. S. Rhodes, Manager
G. E. Hunt
B. L. Willis
P. L. Taylor
C. A. Williams

Ohio-Western Pennsylvania Area

F. L. Plush, Manager
J. H. Deacon
F. H. Loughran
R. H. Gwinn

Midwestern Area

E. E. Arnold, Manager
H. E. Duggan
C. F. Hausen
H. J. Zenke
John Stohr
G. W. Penwell
W. O. Brodine

New York- New England Area

Elmer Wilke, Manager
D. A. Bromm
H. J. Iselin
John Gans

West Coast Area

D. A. Fleischman, Manager
R. S. Brown
R. M. Crosby
A. S. Wood
R. G. Beasley
H. N. Bullard

THERE'S a good reason why these four St. Regis packer experts are known and welcomed in rock products plants throughout the country. They and the 29 other members of the nation-wide St. Regis field engineering organization know packing equipment thoroughly, and they also know from experience the operating problems of the industry. This two-fold knowledge provides them with the "know how" that keeps packing operations in step with production.

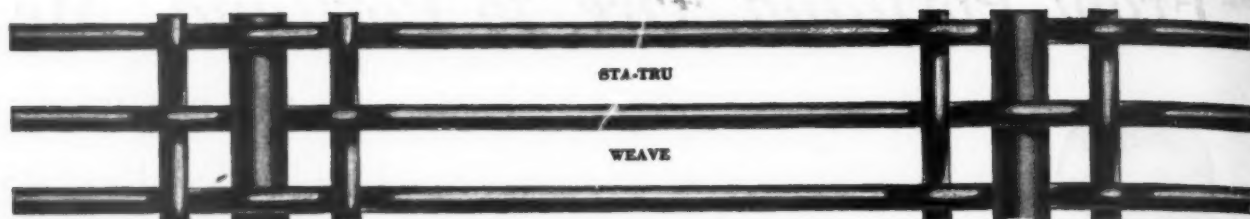


MULTIPLY PROTECTION • MULTIPLY SALEABILITY
ST. REGIS SALES CORPORATION
(Sales Subsidiary of St. Regis Paper Company)

IN CANADA
St. Regis Paper Co. (Can.) Ltd.
Vancouver, British Columbia
Montreal, Quebec

Allentown Birmingham Boston Cleveland Dallas Denver Detroit Franklin, Va.
Los Angeles Nazareth, Pa. No. Kansas City, Mo. New Orleans Ocala, Fla. Seattle Toledo

NEW YORK 17: 230 Park Ave.
CHICAGO 1: 230 No. Michigan Ave.
BALTIMORE 2: 2601 O'Sullivan Bldg.
SAN FRANCISCO 4: 1 Montgomery St.



SUPER-LOY LIVE-WIRE SCREEN-DECKS AND JACKETS

Engineered

to your exact requirements

FOR SLAG SCREENS—STONE SCREENS—ORE
SCREENS—GRAVEL SCREENS—SAND
SCREENS—CLAY SCREENS—COAL SCREENS
—COKE SCREENS—

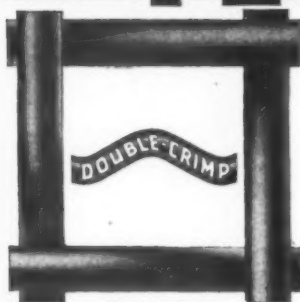
For lively, vibrant, rugged screen performance, have your SUPER-LOY Screen Decks and Jackets *ENGINEERED* in all details for each individual screening installation.

SUPER-LOY *Engineered Weaves* give you screen decks and jackets exactly suited to every unit in your screening layout. Permanent precision spacing of every wire assures continuous clean-cut, accurate, thorough separations.

SUPER-LOY *Engineered Content-Analyses* give LIVE-WIRE vim and endurance to every screening surface.

SUPER-LOY *Engineered Temper-Control* can give you super-hard wires for cylindrical jackets—super-tough wires for high-speed vibrators—super-strong wires for extra-heavy service.

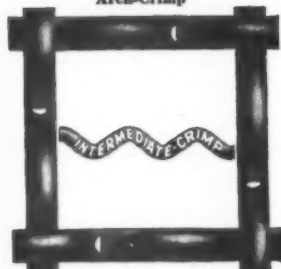
SUPER-LOY *Engineered Stress-Control Crimping* preserves and improves the inherent qualities of every special SUPER-LOY analysis and temper.



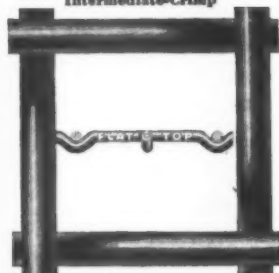
Double-Crimp



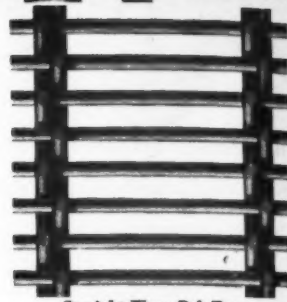
Arch-Crimp



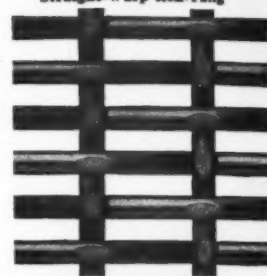
Intermediate-Crimp



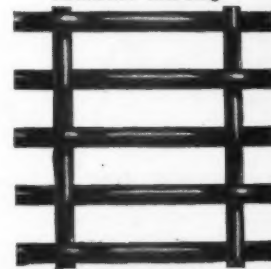
Flat-Top



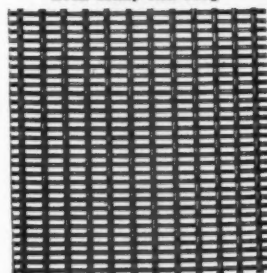
Straight-Warp Rek-Tang



Calendered Rek-Tang



Arch-Crimp Rek-Tang

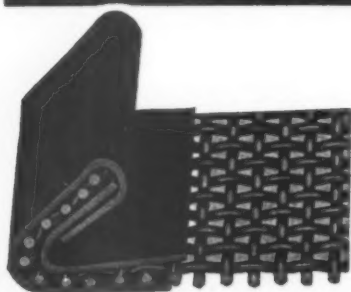


No. 205 Rek-Tang

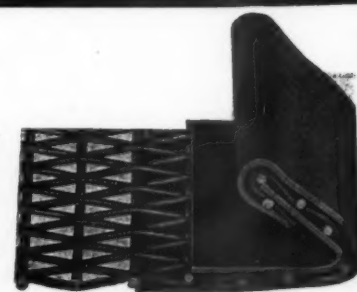
The LUDLOW-SAYLOR WIRE COMPANY

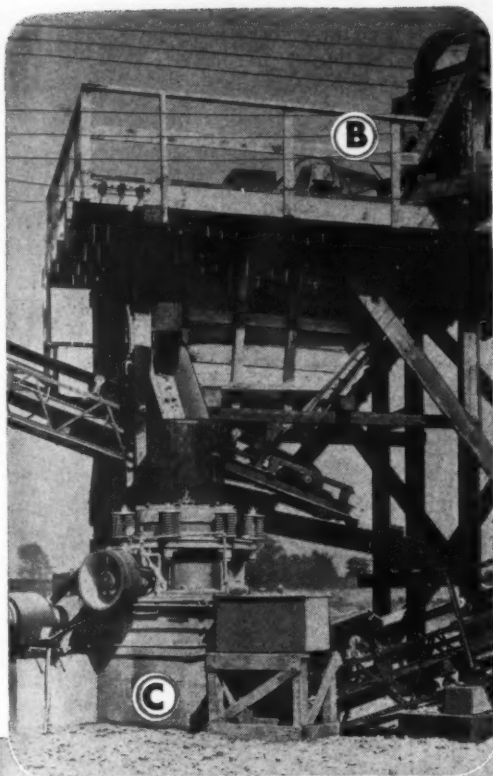
NEWSTEAD AVENUE & WABASH RAILROAD

ST. LOUIS 10, MO.



Order Ludlow-Saylor *Engineered Hook-Strips* for tensioning vibrator-screen decks. They transmit to every tensioned wire an equal share of uniform vibration, evenly distributed throughout the entire screen area. They make screen decks last longer—step-up screen capacities—are easier to handle—quicker to install—need fewer adjustments and renewals.





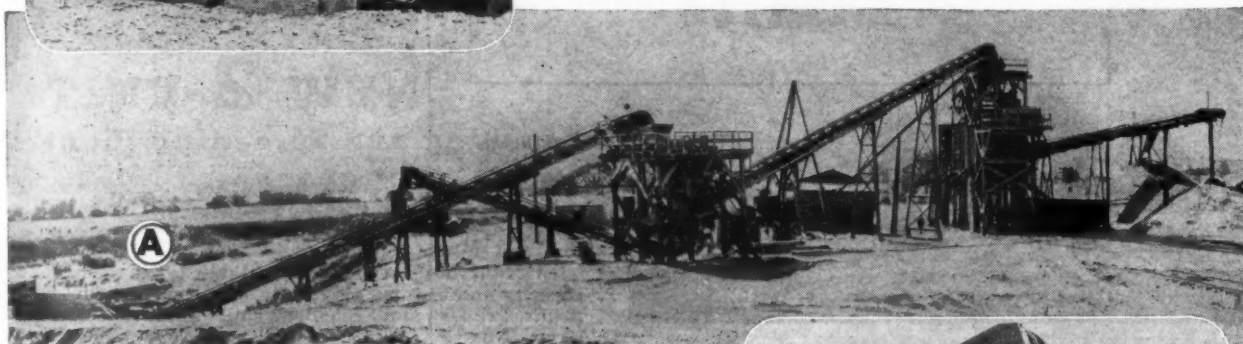
TELSMITH

designed and equipped

The Waupaca Sand & Gravel Co. plant at Custer, Wis., will handle about 175 tons per hour—producing concrete aggregate, 1½" to ¾"; ¾" to ¾"; pea gravel and concrete sand. It is owned and operated by F. F. Mengel Co., Wisconsin Rapids, Wis.

TELSMITH EQUIPMENT INCLUDES:

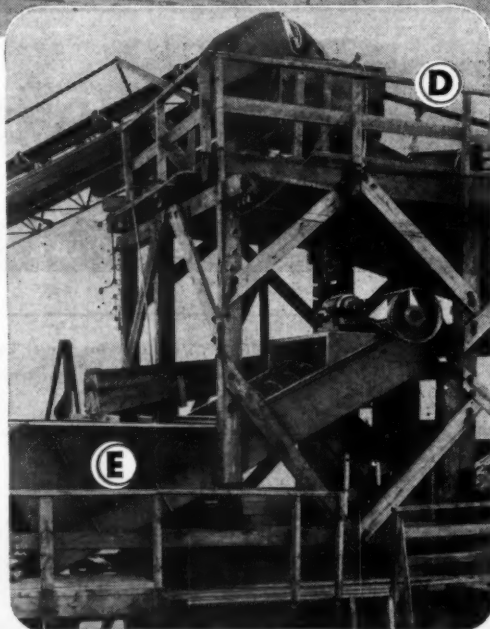
- (A) 30" x 5'-6" Special Plate Feeder • (B) 5' x 12' Single Deck Pulsator Scalper • (C) 28" Intercone Crusher • (D) 4' x 12' Triple Deck Pulsator • (E) 20" x 15' Twin Screw Sand Classifier • 24" x 203', 18" x 60' and 24" x 111' Belt Conveyors • Twelve Bin Gates



READ WHAT MR. F. F. MENGEL OWNER AND OPERATOR SAYS ABOUT TELSMITH COMPLETE PLANT SERVICE

"We wish to express our satisfaction with the gravel washing and screening plant you sold us. Each separate unit does exactly the work it was purchased for, with ample capacity and quiet running which makes for long life. Thank Elmer Kraig for the very fine drawings he made. We built each unit separate and when we set the conveyors and machines they were just where they should be with no changes necessary."

Telsmith's 40 years of engineering know-how is at your disposal. Consultation without obligation. Send for Equipment Guide G-11.



G-14

SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St.
New York 17, N.Y.
Brandels M. & S. Co.
Louisville 8, Ky.

211 W. Wacker Drive
Chicago 6, Ill.
Rish Equipment Co.
Charleston 22 & Clarksburg, W. Va.

713 Commercial Trust Bldg.
Philadelphia 2, Pa.
Rish Equipment Co.
Roanoke 7 & Richmond, Va.

247 Third St.
Cambridge 42, Mass.
Interstate Equipment Co.
Statesville, N. C.

Boehck Eqt. Co.
Milwaukee 3, Wis.
Interstate Equipment Co.
Statesville, N. C.

Mines Eng. & Eqt. Co.
San Francisco 4—Los Angeles 14
Wilson-Weesner-Wilkinson Co.
Knoxville 8 and Nashville 6, Tenn.



Solves Highway Load Limits

NEW 2-UNIT

Crushing and Screening Plant

Your "moving day" problems will be minimized with this new 2-Unit Plant. It moves in and out of the pit easier and, with few exceptions, meets highway load limits as to weight, width and height.

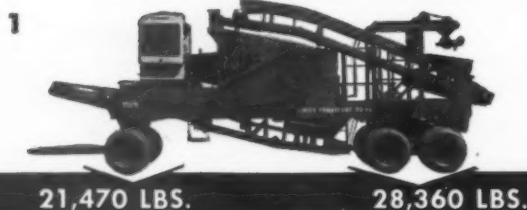
In addition to being highly portable, it has the high capacity and features previously found only in duplex plants. Primary and Secondary Units are mounted on separate 3 axle trucks. Each has its own power unit so it can be operated singly.

Two Primary Units are available—one for quarry and one for gravel. You have your choice of 3 sizes of jaw crushers—10" x 36", 15" x 36" or 20" x 36".

The Secondary Unit is standard with feeder conveyor, roll crusher—40" x 22", vibrating screen—4' x 10', return conveyor and power unit. Write today for complete details about this new 2-Unit Plant.

PIONEER ENGINEERING WORKS

1515 CENTRAL AVENUE • MINNEAPOLIS 13, MINNESOTA



1. A PRIMARY UNIT built for gravel. Equipped with standard power unit and 10" x 36" jaw crusher. Height—12'6", width—8'.

2. SECONDARY UNIT without power unit. Either gasoline or diesel units are furnished. Height—12'6", width—8'.

Engineers and
Manufacturers for
Pit, Mine, Quarry,
Bituminous,
Materials Handling

PLAN WITH
Pioneer
ENGINEERING WORKS

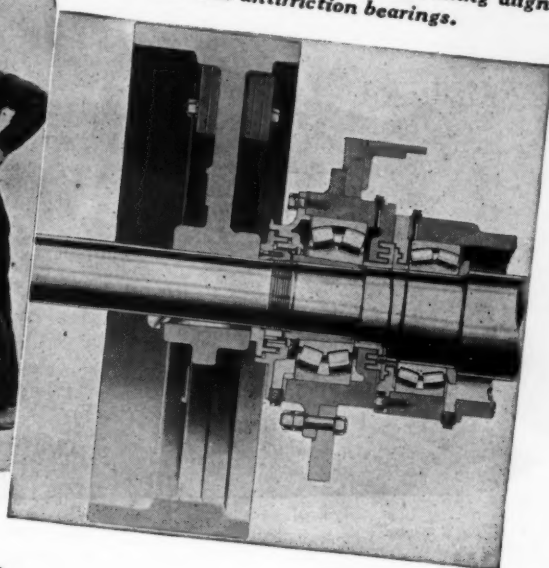
ROLLING ALIGNMENT

for jaw crushers

built by The Austin-Western Co.



• SKF was the first to put rolling alignment into antifriction bearings.



Building materials are scarce these days. Machines that help produce them should work *full time* to meet overwhelming demands. The *rolling alignment* of SKF Spherical Roller Bearings on this huge 2540 Jaw Crusher insures freedom from bearing binding and full capacity to withstand extreme conditions year in and out. In small or large production requiring either fine or coarse material, the crusher that can *stay on the job* is invariably the one that's SKF-equipped. ⁶¹⁵⁴
 SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

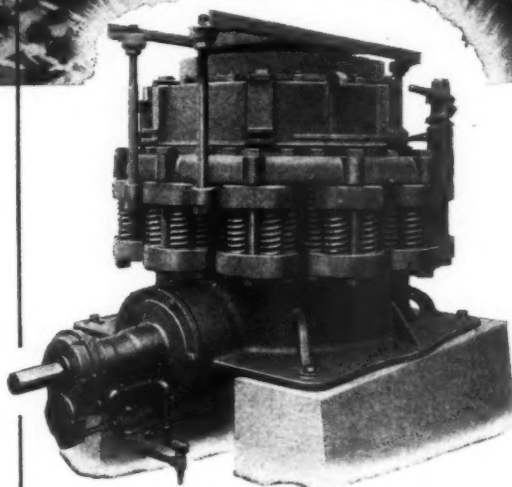


Prepare Today
for Tomorrow's
Demands . . .

WITH the tremendous tonnage of *rigid specification materials* needed for highway expansion and modernization programs, it is well to prepare now to meet the stepped-up requirements of the future. Whether it is *aggregate for concrete* or the *more finely crushed materials* for bituminous type roads, the Symons Cone Crusher is ideally adapted to produce such materials. That so many of the successful and more progressive producers of road materials now use Symons Cones, is evidence of the outstanding advantages of this crusher,—*enormous capacity at fine setting and low crushing cost.*

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

NEW YORK • SAN FRANCISCO • WASHINGTON • LONDON • TORONTO • JOHANNESBURG



Symons Cones are available in several types and in a wide range of capacities. If you are desirous of improving your reduction crushing operations, investigate the merits of Symons Cones for this work.

SYMONS CONE CRUSHERS

Quick Guide to LAPLANT-CHOATE SALES and SERVICE



Main Office and Factory
Cedar Rapids, Iowa
Western Division Office
1022 77th Ave., Oakland, Calif.

Open Territory

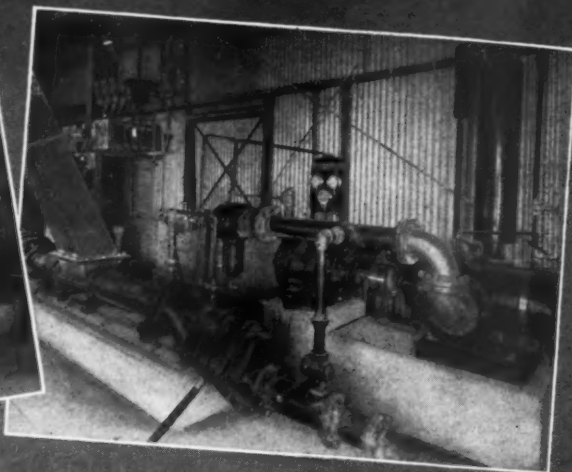
Call the LPC Dealer Nearest You for New LPC Equipment . . . Factory-Built Parts . . . Experienced Service

1. Columbia Equipment Company
Portland, Oregon
Branch Offices: Boise, Idaho
Seattle and Spokane, Wash.
2. Industrial Equipment Company
Oakland, California
Branch Offices: San Francisco—Los
Angeles—Reno—Sacramento—
Fresno—San Diego—Phoenix
3. Western Construction Equip. Co.
Billings and Missoula, Montana
4. Heiner Equipment & Supply Co.
501 W. Seventh Street South
Salt Lake City, Utah
5. Liberty Trucks & Parts Co.
690 Lincoln Street
Denver, Colorado
6. Western States Welding & Press Co.
1304 N. Fourth Street
Albuquerque, New Mexico
7. Myhra Equipment Company
1425 Front Street
Fargo, North Dakota
8. T. S. McShane Co.
1113 Howard Street
Omaha, Nebraska
9. Wentz Equipment Co.
600-08 N. Van Buren St.
Topeka, Kansas
10. Kessler-Simon Machinery Co.
601 North Indiana
Oklahoma City, Oklahoma
11. Malcom Mfg. & Supply Co.
2601 Butternut Street
Abilene, Texas
12. Berry Bros. Machinery & Repair
Works
378 Industrial Boulevard
Dallas, Texas
13. Bill Goodwin Machinery Co.
66 Highway South & Military Dr.
San Antonio, Texas
14. South Texas Equipment Co., Inc.
6 N. Latham St.
Houston, Texas
15. The George T. Ryan Co.
3000 University Avenue S. E.
Minneapolis, Minnesota
16. Barton-Stephens & Company
Sioux City and Des Moines, Iowa
17. Contractors Supply Company
1712 Main Street
Kansas City, Missouri
18. Oklahoma Road Machinery Co.
1200 South Cherokee Street
Muskogee, Oklahoma
19. R. A. Young & Son
301 South Tenth Street
Forth Smith, Arkansas
20. Boyce-Curran Machinery, Inc.
7330 Florida Boulevard
Baton Rouge, Louisiana
21. Miller, Bradford & Risberg Co.
203 N. Dewey Street
Eau Claire, Wisconsin
22. Clem Fleury Equipment Co.
Cedar Rapids and Waterloo, Iowa
23. The Geo. F. Smith Company, Inc.
3343 Franklin Avenue
St. Louis, Missouri
24. Priester Machinery Company
122 South Third Street
Memphis, Tennessee
25. Jackson Road Equipment Co.
842 S. Commerce Street
Jackson, Mississippi
26. The Stone Manufacturing Co.
321 North 25th Street
Milwaukee, Wisconsin
27. Great Lakes Supply Corp.
1026 W. 50th Street
Chicago, Illinois
28. Eighth Equipment Co.
526 W. State Street
Rockford, Illinois
29. Korte Bros., Inc.
219 W. Main Street
Fort Wayne, Indiana
30. Manwaring Machinery Co., Inc.
1321 W. 29th Street
Indianapolis, Indiana
31. Metal Manufacturing Corporation
30th & Garland
Louisville, Kentucky
32. Buchanan-Rooney Equipment Co.
Box 1274
Nashville, Tennessee
33. Leary & Owens Machinery Co., Inc.
3600 Fifth Avenue, North
Birmingham, Alabama
34. Telford Equipment Company
319 East North Street
Lansing, Michigan
35. Cantwell Machinery Co.
830 N. Cassady Avenue
Columbus, Ohio
36. The Bode-Finn Co.
Cincinnati and Dayton, Ohio
37. H. Wetherald Equipment Co.
300 East Amherst Street
Buffalo, New York
38. Anderson Equipment Co.
P. O. Box 1737
Pittsburgh, Pa.
39. Persingers, Incorporated
313 Jefferson Ave.
Charleston, W. Va.
40. Highway Mach. & Supply Co., Inc.
1724 Altamont Avenue
Richmond, Virginia
41. Mitchell Distributing Co., Inc.
Spruce Pine and Raleigh, N. C.
42. State Machinery and Supply Co.
2204 Main Street
Columbia, South Carolina
43. Al Schlosser Equipment Co.
1318 E. Ponce de Leon Ave.
Decatur, Georgia
44. Credle Equipment Co.
309 North Genesee Street
Utica, New York
45. Ensminger & Company
57 Wood Street
Wilkes-Barre, Pa.
46. American Equipment Corporation
York & Allen Streets
Mechanicsburg, Pennsylvania
47. The Chesapeake Supply & Equip. Co.
1211 E. 25th Street
Baltimore, Maryland
48. Slade Tractor Co., Inc.
924 Broadway
Albany, New York
49. E. H. Kliebenstein Co.
1099 Hendricks Causeway
Ridgefield, New Jersey
50. Curry Equipment Corporation
3132 W. Thompson St.
Philadelphia, Pa.
51. Murray Machinery Co.
Augusta, Me., Concord, N. H.,
Montpelier, Vt.
52. H. F. Davis Tractor Company
Boston, Worcester and Holyoke,
Mass.
53. R. W. Bleiler Equipment Co., Inc.
1031 New Britain Avenue
West Hartford, Connecticut
54. Consolidated Equipment & Supply
Co., Ltd.
475 Howe Street
Vancouver, B. C.
55. Wilkinson & McClean, Limited
Edmonton, Calgary & Lethbridge,
Alberta
56. I. J. Haug & Sons, Ltd.
8th & Osler Sts.
Regina, Sask.
57. Huggard & Moncrieff Ltd.
1421 Whyte Avenue
Winnipeg, Manitoba
58. Equipment Sales & Service Co. Ltd.
464 Queen Street East
Toronto, Ontario
59. Automotive Products Co. Ltd.
3282 Wellington Street
Montreal, Quebec
60. Moss Equipment Co. Ltd.
5316 York Street
Cote St. Paul, Montreal, Quebec
61. Machinerie Moderne Limitée
63 First Avenue
Quebec, Quebec
62. Coleman Machinery Co. Ltd.
101 Upper Water Street
Halifax, Nova Scotia
63. W. A. Ramsay, Ltd.
Kaplanian and South Street
Honolulu, Hawaii

LAPLANT - CHOATE

Job-Proved Equipment...

**for Lowest Possible Cost
in Moving Earth**



SPOT YOUR COMPRESSORS where you need the air

Locate Fuller Rotary Compressors in the departments where air is required. Eliminate the cost of long distance pipe lines, consequent leaks, upkeep, and accompanying line friction losses.

With Fuller Rotary Compressors "spotted where you need the air," at proper pressure to do the work, they can be shut down when the various departments have completed their daily cycle of operation. This means a saving in power, supervision and maintenance. Illustrated are only a few of the many Fuller Rotary installations in cement and other industries.

Bulletin C-5 illustrates and describes Fuller Rotaries.
Write for a copy today.

FULLER COMPANY
CATASAUQUA, PENNSYLVANIA

Chicago 3 • 120 So. LaSalle St.
San Francisco 4 • 421 Chancery Bldg.
Washington 5, D. C. • 618 Colorado Bldg.

C-142

FULLER

PIONEERS OF HIGH-EFFICIENCY ROTARY COMPRESSORS

HH Presents

Another advance in INTERNATIONAL DIESEL POWER



UD-14A



UD-18A

More Power! The horsepower of two models of International Diesel Power Units has been stepped up by 11% and 25% respectively—without increasing their size or weight—as the result of advanced engineering in the fuel combustion system. These are the 4-cylinder, 76-hp. UD-14A and 6-cylinder 125-hp. UD-18A Power Units. Power ratings are for *working* horsepower of the complete unit with fan, radiator and power take-off.

Greater Hang-on! When pulled down by overload, increased torque gives these Diesels greater "lug-ability." And they are built to take overloads in stride!

Better Operating Economy! Even with horsepower stepped up, these Diesels run cool under heavy loads and operate at new low cost per horsepower. A low rate of fuel consumption proves their efficiency.

Available Soon! Look for these newest International Diesels in the powered equipment soon available through your International Industrial Power Distributor. And ask him for the facts and figures on these models. He has them now.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 N. Michigan Avenue • Chicago 1, Illinois

INTERNATIONAL



Industrial Power

It's the ***SIDE***
OF A V-BELT
that DOES the **WORK!**
and GETS the **WEAR!**

That's Why the

CONCAVE SIDE
is **IMPORTANT!**

(A GATES PATENT)

**V-Belt
In Sheave**

Clearly, it's the sides of a V-Belt that do all the gripping on the pulley and get all the wear against the sheave-groove wall. That's why longer life for the sides means longer life for the belt!

Look at any V-Belt in its sheave groove and you see at once that the sidewall is the part that gets the wear!

The *sidewall* is what grips the pulley. The sidewall picks up the power from the driver pulley, transmits that power to the tension member, then grips the driven pulley and transmits the power to it!

That explains why you have always noticed that the sidewall of the *ordinary* V-Belt is the part that wears out first. Clearly, anything that lengthens the life of the sidewall will lengthen the life of the belt.

The simple diagrams on the right show exactly why the ordinary, *straight-sided* V-Belt gets excessive wear along the *middle of the sides*. They show also why the Patented Concave Side *greatly reduces* sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belts can possibly give.

*** MORE Important NOW
Than Ever Before!**

Now that Gates Specialized Research has resulted in V-Belts having much stronger tension members—tension members of Rayon Cords and Flexible Steel Cables, among others—the sidewall of the belt is often called upon to transmit to the pulley much heavier loads. Naturally, with heavier loading on the sidewall the life-prolonging Concave Side is more important today than ever before!

THE GATES RUBBER CO., Denver, U. S. A.
World's Largest Makers of V-Belts

GATES VULCO ROPE DRIVES

Engineering Offices
and Jobber Stocks

IN ALL INDUSTRIAL CENTERS of the U. S. and
71 Foreign Countries



THE MARK OF SPECIALIZED RESEARCH

Straight Sided
V-Belt

FIG. 1

How Straight Sided
V-Belt Bulges
When Bending Around
Its Pulley



You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.

Gates V-Belt with
Patented Concave
Sidewall

FIG. 2

Showing How Concave
Side of Gates V-Belt
Straightens to Make Perfect
Fit in Sheave Groove
When Belt Is Bending
Over Pulley



No Bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

"FOR

SPRING SUMMER

WINTER FALL



SPREADING PROFITS



Mr. Schindler, standing beside two New Leader Spreaders which he has been operating for nearly four years.

IT'S THE NEW LEADER SPREADER," says C. T. SCHINDLER,

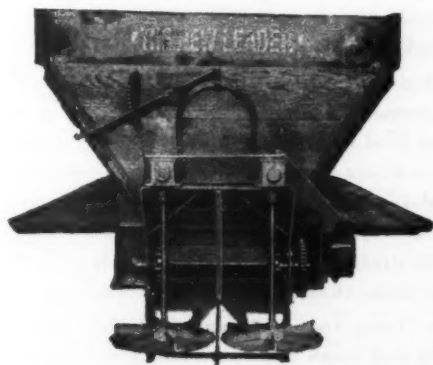
limestone contractor of Linn County, Iowa.

"They really do the job."

**ALL WEATHER ADAPTABILITY KEEPS THE
NEW LEADER BUSY MOST OF THE TIME**

Summer or winter, rain or shine, the New Leader Spreader is a versatile profit-maker. When you're not spreading aglime or marl, and you have your spreader equipped with a rock bottom attachment, you can use this unit for hauling sand, gravel, chips, and small rock for farm driveways, construction jobs, etc. Material won't freeze to sides of hopper during cold weather because hopper is made of wood. Extremely wide bottom and steep sloping sides assure steady and accurate flow of material to distributor discs even when material is wet. Designed to give years of dependable service, the latest model New Leader has an electrically welded all steel frame which mounts on any truck chassis. Hoppers are made of 1 in. flooring securely bolted to steel ribs. Ends are made of selected lumber. Entire mechanism is driven through power take-off from truck transmission. Units are available in standard sizes of 9, 11, 13 and 15 foot hopper lengths.

Write Today for Descriptive Literature



Latest model New Leader Spreader equipped with twin distributor discs. Note the extremely wide bottom and steep sloping sides. This unit may be furnished with Rock Bottom Slides which permit unloading rock without running spreader mechanism.

HIGHWAY EQUIPMENT CO., INC.

604 D AVENUE, N. W., CEDAR RAPIDS, IOWA

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

RECIPE for Excellent WEAR- RESISTANCE and HIGH IMPACT when you need SELF-HARDENING ALLOYS



Many users of wear-resisting alloys have found ISO-ROD the most efficient alloy where *high impact* is combined with *abrasion* such as is encountered on power shovel teeth and drag-line buckets.

ISO-ROD gives nearly three times the wear of competitive alloys in the self-hardening class, resists higher impact and will not chip or spall off under severe use, even on manganese steel.

It is a favorite with a host of quarries because of:

EASE OF APPLICATION—either AC or DC and in all positions.

LOW SPATTER LOSS—less than six percent. No fireworks.

VERY STABLE ARC—quiet and efficient.

NO FLUX TO BOTHER WITH—no waiting for slag to lift.

HIGH SPEED APPLICATION—9 lbs. per hour using $\frac{1}{4}$ " electrode.

NO POROSITY—deposits are free of all pin holes, checks and cracks. Coatings are highly moisture-resistant and non-poisonous. Absolutely will not chip nor spall off of any steel.

EXCEEDINGLY TOUGH—185,000 P.S.I.

BRINELL HARDNESS—520-580—Rockwell C —52-56.

Insist that your jobber supply you with ISO-ROD SELF - HARDENING. Available in all standard sizes from $\frac{3}{32}$ " to $\frac{1}{4}$ " diameters. For light or heavy work.

When you use ISO-ROD as the hot rod with Mangatone NM to repair or rebuild worn manganese steel castings you will obtain the toughest, most wear-resistant surface that you have ever thought of. Try this combination when you have to repair your crusher plates, gyratory mantle, dragline bucket or shovel teeth and you will be more than satisfied with results.

Buy from your independent jobber today. Repair that tough job. Learn how fast and easy ISO-ROD is applied, and experience real savings in self-hardening applications.

RESISTO-LOY CO. GRAND RAPIDS 7, MICH.

Write nearest representative for details.

Eastern Representative
Turney & Beale
40-08 Cpl. Kennedy St.
Bayside, New York

Central Representative
J. E. Oliphant & Co.
505 Uhler Bldg.
Marion, Ohio

Mid-West Representative
Red Arrow Sales Corp.
12 So. Livingston St.
Madison 3, Wis.

Western Representative
L. R. Edminster
2751 S. W. Hume Ct.
Portland 1, Ore.

Two More Major MARION Developments FOR THE ROCK PRODUCTS INDUSTRY

MARION III-M

A truly modern, fast, and powerful 3-1/2-4 yd. Diesel Shovel that insures top yardage and low production costs under all digging conditions. Features include: anti-friction bearings for all high speed shafts—air control of all operations—ships without major dismantling—readily convertible to dragline or clamshell.



MARION 151-M

Built especially for high production in rock where its fine balance of speed, power, and weight are proving daily that it is truly the "machine of tomorrow for today's jobs." Outside dipper handles—single hitch—Amplidyne or Rototrol control—Herringbone gear drive—plus many more features insure top production and long life.



What is Your Material Handling Problem?

MARION

POWER SHOVEL COMPANY

MARION, OHIO, U. S. A.

Offices and Warehouses in all Principal Cities • Established 1884





Spring-Cushioned AGAINST BOOM TROUBLE ...

Quarries are tough on shovel booms. That's why we made the Heavy-Duty Rock Boom on the new Koehring 605 tough as they come, then added extra protection with the Boom-Guard Shock Absorber.

HERE'S WHAT HAPPENS TO UNPROTECTED BOOMS:

Inevitably, side strains and shock twist unprotected booms. Built-in flexibility snaps them back into shape. But continued twisting eventually fatigues even the strongest steel.

HERE'S WHAT KOEHRING DOES ABOUT IT: ➡

On the Koehring 1½-yard rock shovel, heavy coil springs, one on each side of the boom foot, absorb twisting stresses, cushion out torsional strains.

New 24-page catalog lists other reasons why the Koehring 605 thrives on rock. Get your copy today.

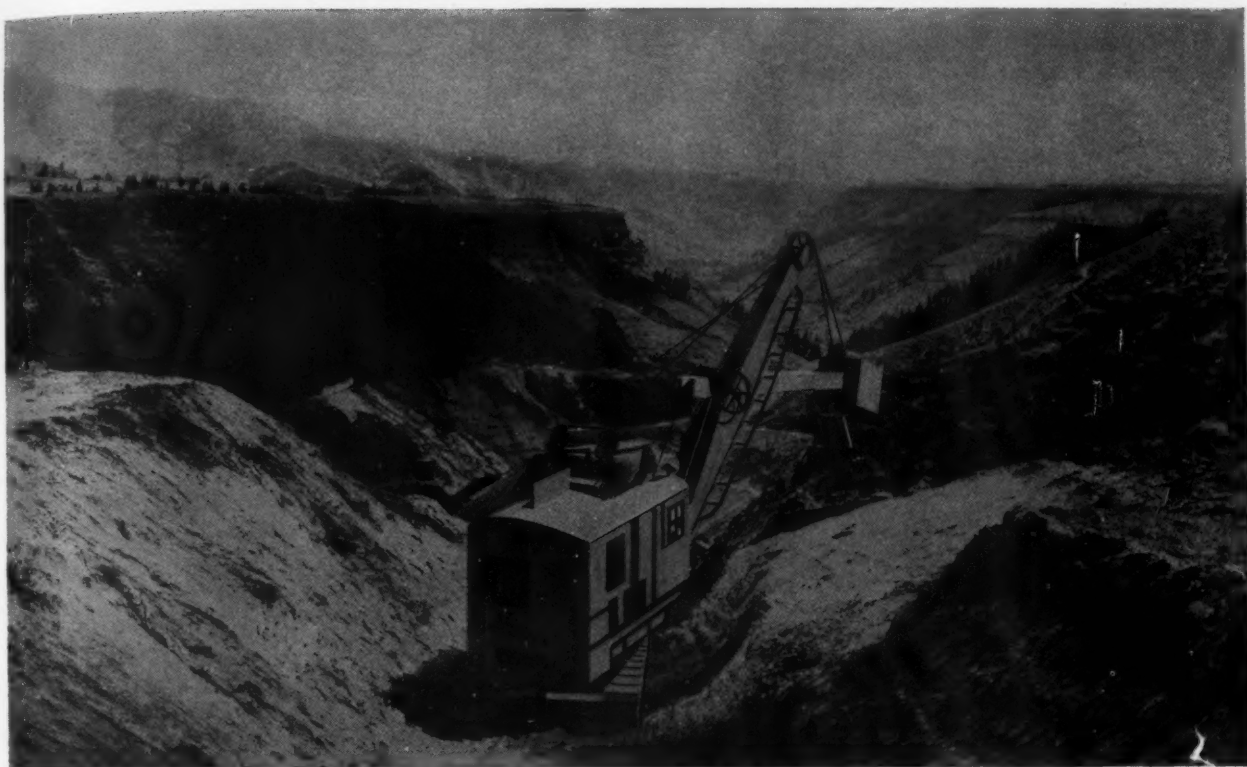


KOEHRING COMPANY

MILWAUKEE 10, WISCONSIN

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

HEAVY-DUTY CONSTRUCTION EQUIPMENT



A SHORTER ROUTE TO MORE PROFITS

CONTRACTORS: Your business is to move earth . . . cut through mountains . . . level-off terrain for bridges, highways and roads . . . erect buildings. Our business is to help you acquire any necessary equipment needed to handle the work properly and economically and, by financing your equipment purchases, working funds are left unimpaired for other uses.

Whenever you are faced with the necessity of buying additional equipment, C. I. T. WILL FURNISH THE FUNDS AT LOW COST. All you need do is make a moderate initial investment . . . we give you ample time to repay the balance. Conserve your working capital for pay rolls, supplies, other operating expenses. Let the equipment help pay for itself out of earnings.

No lengthy negotiations are necessary. Just tell us what you want to buy and how you wish to pay for it. Any of these offices will be glad to handle all details promptly. Rates, terms and full information available upon request and without obligation.

ONE PARK AVENUE, NEW YORK

333 N. Michigan Avenue
CHICAGO

223 Peachtree Street
ATLANTA



660 Market Street
SAN FRANCISCO

416 West 8th Street
LOS ANGELES

In Canada: CANADIAN ACCEPTANCE CORPORATION LIMITED,
Metropolitan Building, Toronto, Canada

FINANCING
PURCHASES
of
CONSTRUCTION
EQUIPMENT

Send for booklet explaining
how YOU can take a shorter
route to more profits.

QUARRYMEN:

When you buy trucks, remember this



only **DODGE** builds *"Job-Rated"* trucks

Whenever you buy trucks, it will pay you to remember . . . "Only Dodge Builds 'Job-Rated' Trucks."

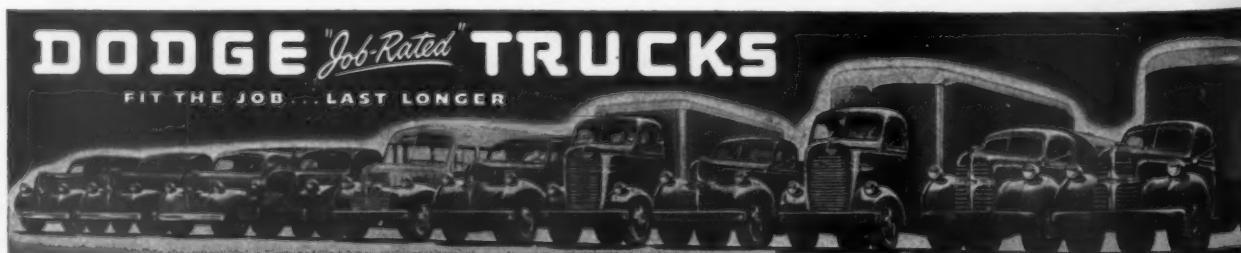
In the wide range of 175 Dodge "Job-Rated" chassis models—there's the *right* truck to fit *your* job . . . and to save *you* money.

And when you buy a "Job-Rated" truck you have the assurance that every unit—such as engine,

clutch, transmission, springs and brakes—will be "Job-Rated" for top performance with *your* loads . . . over *your* roads.

For maximum economy of operation—for long-lasting dependability—get the one truck that best fits *your* job . . . get a Dodge "Job-Rated" truck! See your Dodge dealer—*today!*

DODGE DIVISION of CHRYSLER CORPORATION





YOU CAN CUT ROCK HANDLING COSTS IN HALF!



★ The Dempster-Dumpster system of materials handling has been a "life-saver," so to speak, for many quarry, cement, sand, gravel and other industrial plants during recent years. This is easily understood, once you realize the big job the Dempster-Dumpster is capable of.

To see it in operation, no stretch of the imagination is necessary to convince you at once that one truck, equipped with a Dempster-Dumpster Hoisting Unit, will do the same work of 3 to 5 of your present trucks. This one truck is on the go—giving maximum service—in a never ending cycle, hoisting, hauling and dumping one loaded body of material while any required number of other bodies are being loaded. A synchronized system of haulage that saves trucks, tires, gas, time, manpower and money.

The above illustrations show clearly how the Dempster-Dumpster system works at the loading point. No tracks to lay and move around. Empty bodies are placed exactly where they will be most conveniently loaded. No time is wasted by men or equipment.

Let our engineers assist you in simplifying haulage of material in your operation. Write for completely illustrated catalog NOW.

DEMPSTER DUMPSTER

TRADE MARK REG.

DEMPSTER BROTHERS, INC.

596 SHEA RD., KNOXVILLE 37, TENN.



CEMENT INDUSTRY

Served by

UNION PACIFIC

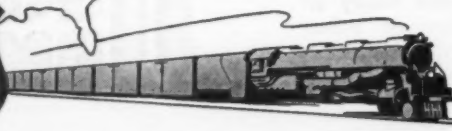
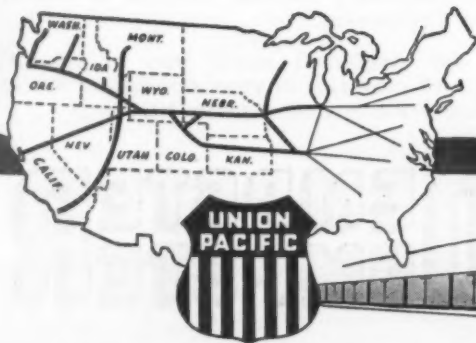
Your industry is one of hundreds served by Union Pacific. Every shipper is assured of efficient, dependable transportation when materials or merchandise are earmarked for the Strategic Middle Route, uniting the East with the Midwest, Intermountain, and Pacific Coast States.

Union Pacific provides specifically designed cars, various services and departments, to assure proper handling of a wide diversity of products.

Union Pacific's facilities and equipment are ready to meet the heaviest needs of commerce. Traffic experts are stationed from coast-to-coast. They will help you with that *next* shipment—and every shipment.

For dependable, fast freight service always . . .

be Specific -
say "Union Pacific"



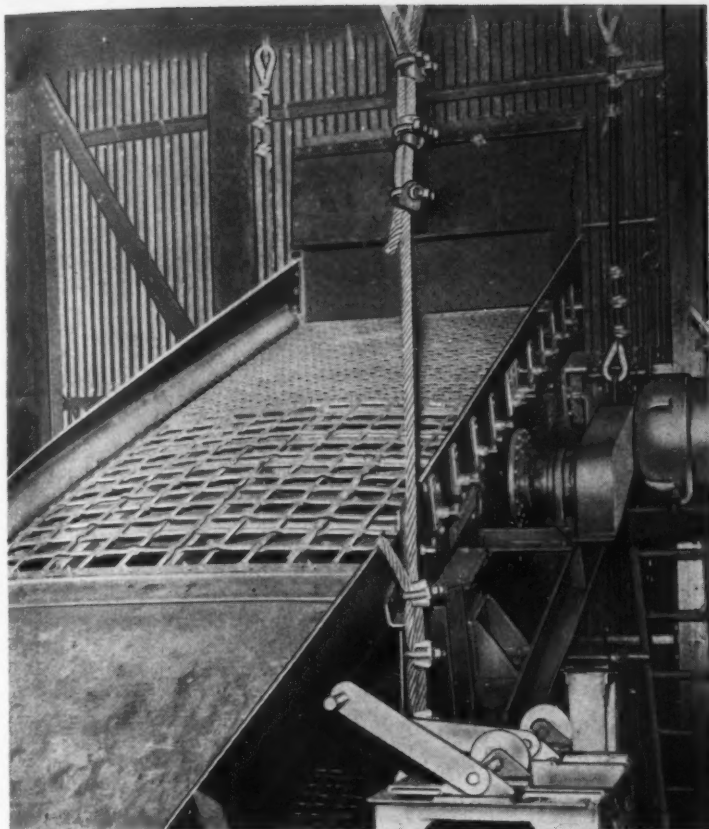
★ Union Pacific will gladly furnish confidential information regarding available industrial sites having trackage facilities in the territory it serves. Address Industrial Dept., Union Pacific Railroad, Omaha 2, Nebraska.

UNION PACIFIC RAILROAD

The Strategic Middle Route

IN WIND, RAIN, SNOW OR HAIL • YOUR FREIGHT GETS THERE BY RAIL

Simplicity Heavy Duty Scalper...



This 5' x 12' heavy duty double deck Simplicity screen completely separates 800 t.p.h. Top scalper deck passes 5 1/2" material.

*gives
Complete
Separation*

Leading rip rap producers use the Simplicity Heavy Duty Scalper to produce larger tonnages of material meeting the required specifications at a minimum cost.

Crushed Stone producers increase capacity with the Simplicity Scalper by reducing material handling. In one operation, replacing a stationary grizzly with a Simplicity Heavy Duty Scalper increased by 20% the material passing a two-inch opening. Resulting increased plant capacity paid for the installation in a short time.

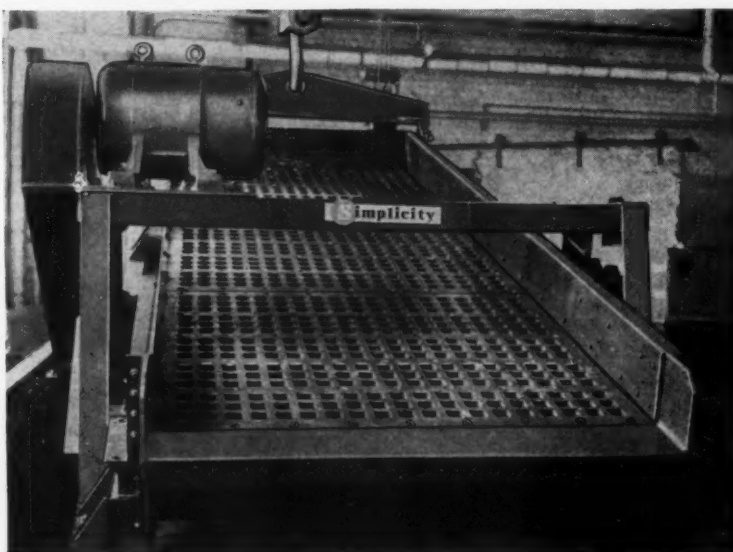
Simplicity Heavy Duty Scalpers are built to stand the impact of four to five-foot boulders yet give the same high production and complete separation of the Simplicity Gyrating Screen. The same advanced engineering principles, the same fine materials, the same superb craftsmanship are built into all Simplicity separation equipment, regardless of its purpose.

Our latest plant expansion again increases our production of these popular Simplicity units. Write for complete information and expert engineering aid.

20% more 2" material passes this 5' x 14' Simplicity Heavy Duty Scalper than the stationary grizzly it replaced. Handles 900 t.p.h.

WHY SIMPLICITY SEPARATION EQUIPMENT IS TOPS

1. Counterbalanced eccentric shaft. Counterbalance machined directly on shaft to exactly balance the weight of entire vibrating screen deck.
2. Heavy duty spherical roller bearings in dust-proof, water-proof housings. Six alemite fittings lubricate entire unit.
3. Rubber Cushioned Power. Rubber corner supports insure positive gyrating action and eliminate excessive structural wear.
4. Four-way tension, double-crowned screening surface insure accurate sizing, stop whip action.
5. Sturdy all-steel construction. I-Beam frame. Every welded part stress relieved in our own electric oven.



S

Simplicity

TRADE

MARK REGISTERED

ENGINEERING CO.

DURAND, MICHIGAN

Generally Speaking

November 1, 1946

Dear Reader:

Costs of new construction are over 60 percent above prewar costs, and are rising at the rate of 3 to 4 percent per quarter.

Reconstruction Finance Corporation has ordered the shutdown of the experimental alumina plants at Salem, Ore., Laramie, Wyo., and Harleyville, S. C. The process developed by Monolith Portland Cement Co., at Laramie uses sintered limestone, anorthosite and soda as raw materials, producing Al_2O_3 as a byproduct of a process designed primarily for the manufacture of cement.

Demand for asbestos in all grades is very heavy, and shortages are anticipated during the balance of 1946 and all of 1947.

Shortages of building trades labor have seriously affected the housing program. Unions and building contractors are taking steps to ease this situation by setting up more liberal apprenticeship programs. St. Louis, for example, has set up a five-year apprenticeship scheme with wages graduated from 70c to full journeyman scale, no age limit, and provisions for previous experience in related war industries.

Department of Commerce has announced that the value of all new construction for the first nine months of 1946 is estimated at \$7,186,000,000. This compares with \$3,292,000,000 for the same months in 1945, a gain of 118 percent. Figures for new construction in September, 1946 show a gain of 160 percent over September, 1945.

Kentucky's State Highway Department has gone into the quarry business with the announcement that it has leased quarry property in Owsley and Carter counties. The Highway Department states that it has gone into the business "reluctantly" due to the acute shortage of crushed stone, and will get out of the business when supplies become plentiful.

Minors between the ages of 16 and 18 cannot be employed as operators of power-driven hoisting machines such as cranes, high-lift trucks, derricks, after September 1.

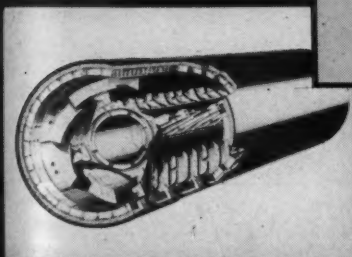
Recent newspaper reports of accidents indicate the need for tightening up controls. A cement quarry workman barring down loose rock was killed when he slipped and fell on top of broken rock below. Use of a safety rope would have prevented this accident. A ready mixed concrete plant worker was burned severely when grease was being cleaned from a truck with cleaning fluid. An ignition spark ignited the cleaning fumes.

(Continued on page 41)

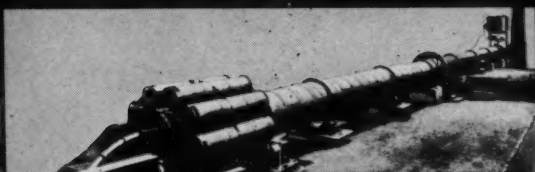
UNAX ROTARY KILNS



HEAT EXCHANGERS



CHAIN SYSTEMS



SAVE FUEL

The UNAX KILN operates with low fuel consumption, producing a product of high quality and uniformity.

The UNAX COOLER is integral with the kiln, providing efficient cooling by means of the air for combustion, which in turn is preheated to a high degree thus saving fuel in the kiln.

The Chain System in the wet kiln and the heat exchangers in the dry kiln provide additional substantial fuel savings.

If you are burning lime or lime sludge, etc., write for information to determine the savings possible in your fuel consumption, thus reducing your manufacturing costs.

F. L. SMIDTH & CO.

11 WEST 42ND STREET

ENGINEERS AND
MACHINERY MANUFACTURERS

NEW YORK, N. Y.

Thermoid — For Progress in Industry

The old-fashioned hand gun was a great advance over the oil can and grease paddle. But it was still slow and lubricant-penetration was uncertain.



Just pit the antique method above against this modern, powerful portable greasing unit for servicing all types of automotive and construction equipment on the job. The compressor here delivers pressures up to 200 lbs. which may be boosted on the hydraulic side to as high as 10,000 lbs. per square inch! Thermoid wire braid hydraulic hose carries this load with ease.

HELPING the planners of tomorrow's products and methods is just one of Thermoid's services to industry. Without the development of a hose capable of extremely high pressures, the above pictured greasing unit would still be an "inventor's dream." The production of Industrial grease and hydraulic control hose is the answer to many difficult problems. There's an answer waiting at Thermoid for your special hose problems, too.

Get in touch with your local Thermoid Jobber or direct factory representative. 60 years of research and industrial rubber know-how are at your beck and call for problems relating to all kinds of hose, belting and friction materials.

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products.

Thermoid Rubber

DIVISION OF THERMOID COMPANY
210 Whitehead Road, Trenton 6, New Jersey

Contributor to Industrial Advancement Since 1880



(Con

ma.
be

a
th
Re

of
pu

ad
ti
di
to
du

Pe
25
an
qu

th
th
mo
th

qu
to
f
l

f
a
t

c
s
m
l
h

GENERALLY SPEAKING

(Continued from page 40)

The Wage Stabilization Board recently ruled that an employer cannot make an unauthorized cut in wages of employees without running the risk of being disallowed an income tax deduction as a penalty.

* * * * *

Employers cannot fail to withhold income taxes from payments made to a veteran in lieu of reinstating him in a job to which he is entitled under the Selective Service Act. It has been ruled by the Bureau of Internal Revenue that these payments are wages subject to withholding taxes.

* * * * *

Bonus paid employees, as profit-sharing, need not be regarded as part of regular compensation and may be excluded at the end of the year in the computation of overtime rates due under the Wage and Hour Law.

* * * * *

A new safety code has been drawn up for the coal mines which will be administered by inspectors of the Bureau of Mines. This Code will be effective in all coal mines as long as the mines are being operated under the direction of the federal government. One provision of this code of interest to the crushed stone industry is that all except "wet" mines must be rock-dusted to within 80 ft. of the face of rooms and entries.

* * * * *

Foreign demands have cut into the supply of potash in this country. Potash is now being distributed by allocation of the Combined Food Board, 25,000 metric tons having gone for foreign agriculture, particularly Japan and Korea. Superphosphate is being manufactured at record level, but inadequate sulphuric acid supplies have tended to reduce production.

* * * * *

Contracts amounting to more than \$109,000,000 have been awarded by the Bureau of Reclamation in the fiscal year ended June 30, 1946. All of these contracts were awarded prior to the President's directive, placing a moratorium on new Federal public works, and therefore are not affected by the order.

* * * * *

Under the Wage-Hour law, a company cannot pay employees less than required even though, due to financial difficulties, the employees have agreed to the smaller payments. A Circuit Court of Appeals recently ruled that financial difficulties will not support a release based on less than the legal amounts due.

* * * * *

German and Austrian scientists are being brought to this country to further American military research and development. Later, these men will be available for civilian research projects. More than 200 scientists brought to this country have come voluntarily.

* * * * *

Cement companies are freely admitting that plant facilities have become worn out producing the vast quantities of cement required for war construction. Unless immediate steps are taken to replace worn equipment and make essential repairs, the mills will not be able to meet the tremendous peace-time demands. Lack of sufficient priorities for machinery during the late War is one of the causes for present conditions, although the government has now placed the cement companies on the highest priority schedule.



PAGE FROM A BLASTER'S NOTEBOOK

DEPEND ON PRIMACORD TO GET THE JOB DONE
EASIER, MORE EFFICIENTLY, WITH LESS HAZARD

EASY HOOK-UP — Because all PRIMACORD connections are simply tied square knots and half hitches, kept in plain sight above-ground, easily inspected.

SHOT EFFICIENCY — Because every cartridge in contact with PRIMACORD is efficiently detonated. Every cartridge *goes* with the added force of a primer cartridge — and each hole *goes* with full power, in a planned sequence that relieves burden and produces better fragmentation.

LESS HAZARD — Since PRIMACORD is not sensitive to sparks, friction, stray currents or ordinary shock, it reduces normal loading and handling hazards.

There's really no mystery about PRIMACORD efficiency. It's just plain, proved fact — fact that's backed by the years of experience of pit and quarry men the nation over.



Plain Primacord — for practically all holes and trunk lines.



Reinforced Primacord — for deep holes where extra tensile strength or resistance to abrasion is desirable.



Wire Countered Primacord — for extremely ragged deep holes or where maximum resistance to abrasion is important.

P-24

PRIMACORD • BICKFORD

Detonating FUSE

Also ENSIGN-BICKFORD SAFETY FUSE • Since 1836

THE ENSIGN-BICKFORD COMPANY
SIMSBURY • CONNECTICUT

★ ★ ★ Editor's Page

Tampering With Demand Upsets Apple Cart

IT HAS BEEN PROVEN throughout the war, and ever since, that artificial restrictions and laws on the conduct of business just do not work. All about us we see evidence of the futility of tampering with economic laws that are fundamental.

The O.P.A. — our profit control law — has all along been the number one snarler of industry and trade because it is an obstacle to the normal functioning of supply and demand, which have a natural fundamental relation one with the other.

Supply and demand can come into balance only through increased productivity per unit of effort, and any and all artificial "stimulants" should have been thoroughly explored for the barriers they set up against their own goals.

Many other economic laws and edicts, while not so severe in their overall effects on business and industry as O.P.A., will not stand up under examination, however noble their intent be in theory. They may even defeat their very purpose because, either through ignorance or lack of recognition of the inter-relations and workings of industry or possibly plain disregard, new complications arise to rock the boat.

Housing Restrictions

That is happening to the branches of the rock products industry supplying aggregates and concrete for construction, through building restrictions imposed by the Veterans' Emergency Housing Program. Recent amendments to cut even further allowable construction away from anything but housing, by their very rigidity, threaten shortages in supply of aggregates needed for housing.

Very few outside the industry itself have a thorough understanding and appreciation, for example, of how a sand and gravel business is conducted. They do not realize that this industry is one that must depend upon a diversity of outlets that have set up purchase standards for size of aggregates, etc., between different classes of construction. Aggregates just cannot be produced for housing alone with any economy.

It would not be so bad if the construction of highways, public works and commercial building, comprising possibly 80 per cent of a producer's normal volume, could utilize the same sizes of aggregates as required for housing, but that isn't the case.

Housing demands much fractional inch coarse aggregates and an abnormal quantity of concrete sand, masons' sand and plastering sand, representing a small fraction of the total tonnage normally shipped, while the major construction fields take the bulk in coarser grades. Any and all size grades

must be cut from run-of-deposit material. Every ton of approved grade produced (for housing) requires that a definite volume of run-of-deposit material, usually containing a heavy proportion of coarse particles, must be processed.

Success in simultaneously moving the various size grades to the several markets for which each is peculiarly fitted determines the ability of a producer to deliver a product extremely low in price to the consumer—a fact that government officials should recognize and keep in mind. This kind of maladjustment to normal distribution should have been sufficient reason alone for price adjustment or decontrol from ceilings.

Stockpiles Cost Money

It is typical of many plants that the product that pays the freight now has become a stockpile, tying up thousands of dollars in working capital, and that that stockpile continues to build higher as more production goes for housing construction. Already stockpiles in some plants are approaching available limits, and recrushing is not the answer, for crushers are not immediately available.

There is a very definite element of risk in carrying excessive inventory, for assets so frozen can only come available when other construction is resumed in sizable amount. The risk is in whether sufficient long-deferred highway construction and public works will resume within the shipping range of a given plant. Unless and until stockpiles are depleted to normal inventory, production costs for the fraction sold for housing, in effect, actually exceed costs to the consumer.

Stockpiling is a costly operation and is to be avoided in preference to straight flow of material through the plant into cars or trucks for direct delivery, involving handling and rehandling and very possibly re-washing and re-screening as a result of contamination. Some or all of that cost conceivably might have to be absorbed later.

All this is cited to illustrate the dislocations and unbalances that often follow restrictions on business, that, on the surface, may be designed for a good purpose. The solution lies in early resumption of other construction than housing. During all these intervening months it seems to us that many companies should have been granted price consideration in recognition that stockpiled materials constitute an element of cost in the production of aggregates for housing.

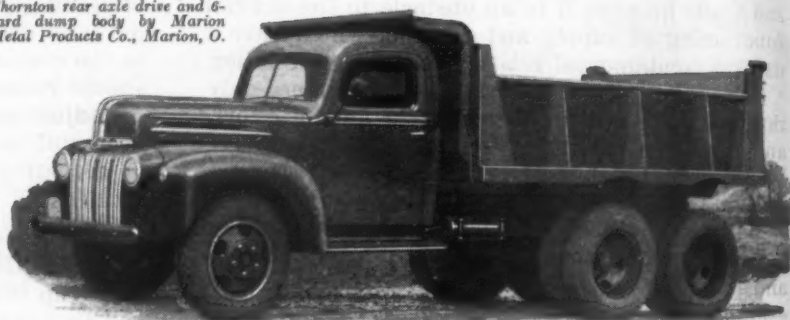
Broc Nordberg

REGISTRATIONS SHOW IT—OPERATORS KNOW IT!

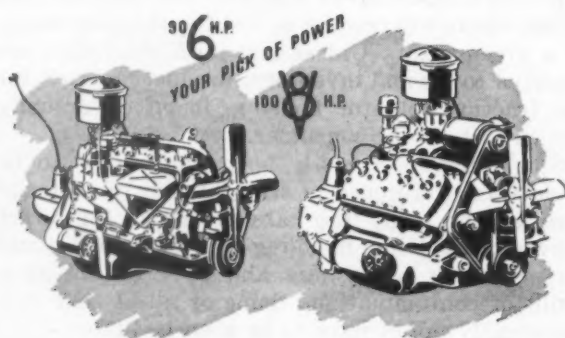
"FORD TRUCKS LAST LONGER!"



*Ford Heavy Duty unit, with
Thornton rear axle drive and 6-
yard dump body by Marion
Metal Products Co., Marion, O.*



One big reason— **FORD ENGINES STAND UP!**



Ford Truck engines—either the famous 100-H.P. V-8 or the extra-thrifty 90-H.P. Six—are world-famous for endurance in severe service. Here are some reasons why: They're of time-proved L-head type, quiet, simple, efficient—hardened valve seat inserts resist pounding and pitting—precision-set valves need no adjusting—valve springs are shot-peened and rust-proofed for long life—Ford alloy cast steel crankshafts are balanced and counterbalanced for enduring smoothness—Flightlight aluminum alloy 4-ring pistons maintain good compression, save oil. Full pressure lubrication, with positive, large-capacity oil pumps, plus effective crankcase ventilation, scientifically correct cooling and efficient oil- and air-filtering, all prolong Ford engine life.



There are more than fifty such long-life features throughout Ford Truck engines and chassis. **NO OTHER TRUCKS BRING YOU ALL THESE IMPORTANT PLUS VALUES AT ANY PRICE.** It is the extra worth which Ford alone offers that makes Ford Trucks Last Longer. This extra value tells you clearly why 7 out of 11 of all Ford Trucks

registered since 1928 are still in service—why more than half of all Ford Trucks on the job are at least nine years old!

The best way to get a new Ford Truck is to get your order in. See your Ford Dealer now.

FORD TRUCKS

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE

Rocky's NOTES

Nathan C. Rockwood

able Americans can always get together, for their joint best interests. (2) There was always a decision; things were not permitted to drag along. (3) Adverse conditions could be corrected promptly. (4) Factory operations continued without interruption while grievances were being ironed out. (5) The interests of the minority were protected, because the machinery was provided for their case to be heard. (6) The three partners in industry (Labor, Capital and the Consumer) benefited. There were no strikes during these 16 years and the management had no hesitation in explaining its problems to the workers through their assembly.

Overthrown by Unions

In 1935 a minority of the workers (not over 10 percent), with the assistance of the Secretary of Labor (Madam Perkins) and the New Deal laws "organized" the Goodyear employees, notwithstanding a vote of 11,516 against a strike called by the newly organized "union," to 891 for it, with 298 void ballots. From that time on the corporation has been the victim of strikes, sitdowns, violence and troubles familiar to every employer in the last 10 or 12 years. Apparently, at no time has a majority of Goodyear workers been in sympathy with these developments; they furnish proof positive of the facility with which a well-organized and expertly directed minority may wreck the best of industrial organizations.

The hope for future industrial peace and productive labor relations, according to Mr. Litchfield, lies in a resumption of something like his Industrial Republic. The plan must provide ways and means for workers to see that their interests and those of management and capital are the same, from the broad-visioned point of view. Moreover, the workers are not the only ones who must have vision and good judgment. There is a lot to be done yet on the part of management and capital. It is not necessary, or possibly desirable, for workers to give up national unions. But unions must have intelligent leadership, and the workers in individual plants, localities or industries, must be able to grasp the fundamental economics of those localities and industries.

For, as Mr. Litchfield makes quite clear, it is neither Labor or Management that ultimately decides the wages of either Labor or Capital. It is the Consumer. And any failure to understand the overall problem of production and productivity can only end in disaster for all in a free society. It is not conceivable that any great number of Americans really desire to live under a totalitarian state in which they would be deprived of even the right to choose their own jobs, not to mention their right to strike or to change jobs. But many unthinking people are misled by subtle propaganda to their own detriment, along with that of their country.

"The Industrial Republic"

P. W. LITCHFIELD, chairman of the board of directors and former president of the Goodyear Tire and Rubber Co., under the title, "The Industrial Republic,"* has written an interesting and instructive case history of his corporation's many years' experience in labor relations. Moreover, he has done this without any apparent bias; on the contrary his story breathes sincere sympathy and understanding for the ordinary working man, and his problems, both economic and political.

Background

The present book is divided into four parts, the first being a reprint of the author's "The Industrial Republic," published in 1919, following his reflections on the conclusion of what we now call World War I. Mr. Litchfield's starting paragraph is: "After four years of fighting among all the leading nations of the world to determine under what form of government people should live in the future, we would naturally look for an era of peace. Instead of this, we find a state of anarchy and civil war in some of the nations, and a feeling of industrial unrest in others. The focusing of attention on the faults of political government has produced a similar focusing on the faults of industrial management."

Now, Mr. Litchfield and his associates not only saw faults in industrial management in 1919, but they did something about it. They designed and established a governing organization for the corporation's employees based on a near parallel to the Constitution of the United States. The keystone of philosophy behind this "industrial republic" is best expressed in the author's own words as follows: "These citizens [qualified workers] would have the power to elect representatives who should govern the policy of the business to the extent of safeguarding their human rights. Only as they provide their own underlying capital for the business, may they gain control to the extent of being able to limit the capitalists' rights."

This would mean joint control by representation of both Labor and Capital until this point is reached. Until that time representative control by the workers should only be to the extent of protecting their human rights while the control of property rights should remain with those who furnish the property."

How this constitution was written by a council of industrial relations, organized in March, 1919, is described in Part II of the book. It provided for the (1) executive powers to be vested in the management; (2) all legislative powers were granted to an industrial assembly, consisting of two houses, a senate and a house of representatives. Since the charter of the corporation and the laws of the state fix the final authority and responsibility for management in its board of directors, it had to retain the right to veto or annul; otherwise the powers of the industrial assembly were exclusive on the subject of wage adjustments, working conditions, and the adjustment of grievances in accordance with an established procedure.

Experience

Various amendments were made to this constitution, but the spirit was unchanged, from the time of its adoption in June, 1919, by majority vote of the employees through a secret ballot, to 1935 when the industrial assembly and the industrial republic of the corporation were discontinued by the Secretary of Labor under the Wagner Act as "a company union." Mr. Litchfield admits that one of the weaknesses of the industrial assembly, the chief argument used against its continuance, was that the time of its members, in their sessions, was paid for by the corporation at the employees' regular wage rates. He thinks it might have been better had the assembly levied a small assessment on "industrial citizens" [qualified employees] to cover the cost of the assembly.

Nevertheless, the scheme worked with marked success for reasons given by Mr. Litchfield as follows: (1) There were no deadlocks. When all the facts have been studied, reason-

*Published by The Coedey & Gross Co., Cleveland, Ohio, price \$4.



model **HD-10** **BALANCE**

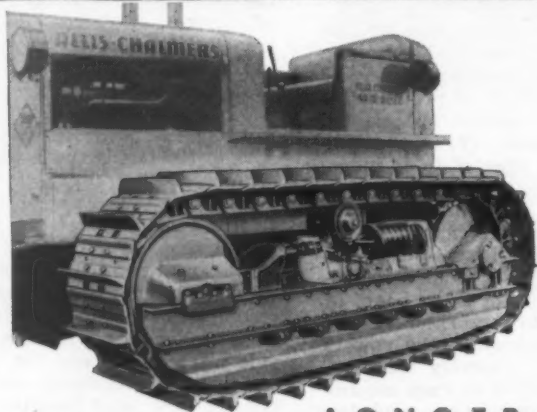
**Makes Every Load a Bigger Load
... Every Job an Easier Job!**

A highly profitable tractor to own ... a pleasure to operate — that's the **CORRECTLY BALANCED HD-10!**

EVERY LOAD BIGGER! Extended track and addition of approximately a half-ton in properly distributed weight provides ground-gripping traction, more logging and pushing ability.* Makes it a better performer with any equipment ... on every type of soil.

EVERY JOB EASIER! Operators especially like its smoother, easier riding and performance. They get more done with less effort. Wear and tear on tractor and auxiliary equipment is cut to a minimum, too!

This all adds up to greater output, more profit. Your Allis-Chalmers dealer will be glad to give you complete information ... **NOW!**



L-O-N-G T-R-A-C-K

Gives you
IMPROVED TRACTION...
IMPROVED BALANCE....
IMPROVED RIDING.....
IMPROVED PERFORMANCE

* Ground contact is increased over ten per cent, ground pressure reduced, with two more shoes per track. Truck frame is longer and heavier. Additional truck roller on each track reduces wear and tear. Extra heavy front spring makes HD-10 especially desirable for working with front or engine mounted equipment.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.





Washington NEWS

NOTWITHSTANDING President Truman's directive eliminating controls on meats and his public statement that most other commodities would be decontrolled, practically all building materials will remain under control. The veterans housing program has become such a hot political issue that nothing will be done that remotely suggests a possibility of higher prices. In spite of irrefutable evidence presented by the crushed stone, and sand and gravel industries that only a relatively small percentage of the production goes into housing, OPA has rejected applications for decontrol. Practically all the increases granted to the industries have been allowances for freight or wage increases which are beyond control of the producers.

Unfortunately for the housing program, the wrong emphasis has been placed on types of construction. Comparatively few veterans can afford new homes. They want an apartment at a reasonable cost, and the housing program has completely missed the boat in providing a program which would induce investment of funds in this type of construction.

Deny Ready Mix Decontrol

OPA has denied the application of the National Ready Mixed Concrete Association for decontrol. Denial of decontrol was based on OPA's alleged inability to make a finding that supply is in balance with demand. Ready mixed concrete was also held to be important to business and living costs because of its importance to the housing program. Executive Secretary V. P. Ahearn has pointed out that the only way the case can be brought before the Price Decontrol Board is by proceeding through the Industry Advisory Committee.

Authority Granted Ready Mix Producers to Pass Along Increases

In the October issue of *Rock Products*, mention was made that it was expected authority would be granted to the ready mixed concrete industry to pass along increases in prices of cement and aggregates. This authority was finally granted in Amendment 64. This amendment to Sec. 25 of MPR-592, authorizes producers to add to their maximum prices "the dollars-and-cents amount of their increased cost resulting from (1) increases in maximum prices permitted by Amendment 17 to MPR 224 and (2) in-

creased cost of freight on cement, sand and coarse aggregates by ex parte Interstate Commerce Commission actions effective July 1, 1946, and those state regulatory agency actions affecting rail freight rates effective subsequent to June 30, 1946." The National Ready Mixed Concrete Association protested the unreasonable delay in granting the authority for these increases, pending the completion of a questionnaire form.

Ready Mix Not On Schedule A

Ready mixed concrete, which had been considered for inclusion in the list of industries to be placed on CPA schedule A, has been deleted from the list. Under this schedule, 75 percent of the production would have to be allocated to home building if rated orders calling for that percentage were served. However, the industry is co-operating with home builders, and is furnishing a much larger part of its production for this construction.

Deny Decontrol to Crushed Stone and Agstone

On October 10, C. G. Gran, OPA head of the Agricultural Chemicals Section, Food Price Division, in a letter to Henry A. Huschke, managing director of the Agricultural Limestone Division, National Crushed Stone Association, denied decontrol of agricultural limestone. The letter denied decontrol on the grounds that "there appears to be a definite shortage of available supply, especially in the large consuming areas." It was also contended that undelivered orders of the government for liming material had increased to 3,500,000 tons as of June 30, 1946. The third point of denial involved the importance in business and living costs of agricultural limestone. Mr. Gran, on this point, stated that "decontrol at this time would be inconsistent with the avoidance of a dangerous and cumulative unstabilizing effect." It is planned to point out the fallacy of this paragraph in Mr. Gran's letter, but apparently nothing can be accomplished prior to bidding in October and November.

In denying decontrol to the crushed stone industry, John M. Bulkley of OPA, held that a number of area shortages existed, and the veterans housing program and demands of essential commercial and industrial construction are so great as to require peak rates of production by the industry. Mr. Bulkley suggested a peti-

tion for decontrol through an Industry Advisory Committee. President Austin of the National Crushed Stone Association replied to the letter denying decontrol, vigorously protesting the findings of Mr. Bulkley.

Grant Price Increases

Although the sand and gravel, crushed stone, ready mixed concrete, and concrete products industries have not been granted decontrol, there have been many regional and company price increases, indicating that the government realizes it will not be able to get maximum production unless materials can be sold at a reasonable profit.

Increases granted sand and gravel producers in Nassau and Suffolk Counties, New York were extended to Kings and Queens Counties so that the Atlantic Coast Sand Co., could be included in the New York Metropolitan area sales. Consumers Co., Chicago, Ill., received authority to increase its previous MPR 592 price for No. 2 Torpedo sand by 21c per cu. yd. Southern Materials Co., Norfolk, Va., obtained authority to increase the prices of its entire line of sand, gravel and ready mixed concrete by an amount not in excess of 9.3 percent. Smoot Sand and Gravel Corporation, Washington, D. C., has received a new price per ton set up from OPA as follows: f.o.b. customers trucks, concrete sand, \$1.15; building sand, \$1.15; gravel, \$1.60; asphalt sand, \$1.45; torpedo sand, \$1.60; grit, \$1.80. The f.o.b. prices for freight car delivery are the same in each classification, but do not include torpedo sand or grit. The f.o.b. scow delivery prices are \$1.05 for concrete sand; \$1.05 for building sand; \$1.60 for gravel; and \$1.35 for asphalt sand. Prices per bag of 80 to 100 lbs., f.o.b. customers' trucks is 35c for sand and or gravel.

Several adjustments in ready mixed concrete prices have been made, typical of which are the following: In the Cleveland area, an elaborate system of pricing by zones was set up, and also for special types of concrete. The listed prices include an adjustment of 7½ percent over the adjusted prices established by Order No. G-1, effective December 3, 1945. In the Wheeling, W. Va., area producers have been given authority to increase maximum prices in effect on April 5, 1946 to each class of purchaser by 21 percent.

Concrete pipe manufacturers have been authorized to increase prices in

(Continued on page 57)

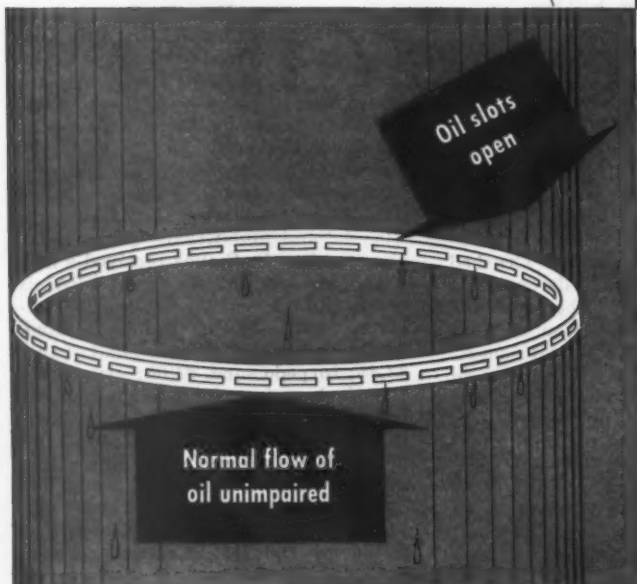
Diesel Engine

DANGER

points

Plugged Oil Slots Increase Oil Consumption

When carbon and gum formations clog oil-ring slots, the oil which would normally return through these apertures to the crankcase is forced into the combustion chamber. Here it joins the other products of combustion which "coke" on the ring belt area cementing the rings in their grooves and aggravating the clogged condition of the ring slots.



RPM DELO Oil keeps oil slots open, prevents stuck rings

RPM DELO Diesel Engine Lubricating Oil is compounded to prevent engine deposits these three ways:

1. An oxidation inhibitor reduces the formation of gummy particles which form the binder for carbon deposits.
2. A detergent prevents deposits forming on rings and pistons, keeping engines cleaner.
3. A dispersive agent insures removal of this material when the oil is drained.

Other compounds in RPM DELO Oil minimize hot-spot wear, prevent corrosion, eliminate foaming.

To match the fine performance of RPM DELO OIL, use these equally efficient companion products from the same famous "RPM" line—RPM HEAVY DUTY MOTOR OIL—RPM COMPOUNDED MOTOR OIL—RPM GEAR OILS AND LUBRICANTS—RPM GREASES. For additional information or name of your distributor, write any of the companies below:

STANDARD OF CALIFORNIA • 225 Bush St., San Francisco 20, California
THE CALIFORNIA COMPANY • 17th and Stout Streets, Denver 1, Colorado
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • 30 Rockefeller Plaza, New York 20



the *Personal Side* of the news

Director of Purchases

EDGAR T. OBENCHAIN has joined the National Gypsum Co., Buffalo, N. Y., as director of purchases. His appointment fills the vacancy left by the recent death of Harold Drake who had



Edgar T. Obenchain

been in charge of the purchasing department almost since the organization of the company. Mr. Obenchain has had 12 years experience in the gypsum business. He has also held the position of sales engineer for the Bucyrus-Erie Company and Owens Corning Fiberglass Corporation. During World War II Mr. Obenchain served in the U. S. Navy as assistant director of the Material Procurement Office, Bureau of Ships. In World War I he served one year in the United States Army Field Signal Corps.

Engineering Consultant

H. S. MATTIMORE is now an engineering consultant in Colonial Park, Penn., where he was formerly senior engineer, Public Works Department, U. S. Navy. He also served at one time as materials engineer with the Pennsylvania State Highway Department.

Heads Lime Firm

W. J. MILLS has been elected to head the Gager Lime Co., Sherwood, Tenn., successor to the Gager Lime Manufacturing Co., which has been purchased by J. M. Gager, Jr., W. J. Mills and F. M. Ferguson, who will be general manager of the new concern. J. M. GAGER, JR., who is a grandson of the founder of the original

company, will be sales manager and TOM SATTERFIELD will continue as secretary-treasurer. AUBREY GARNER remains as plant superintendent.

Becomes Chairman

L. T. SUNDERLAND, president of the Ash Grove Lime and Portland Cement Co., Kansas City, Mo., has been made chairman of the executive committee. W. P. SABIN has been appointed vice-chairman; PAUL SUNDERLAND, chairman of the board; ALLEN B. SUNDERLAND, president and secretary; and L. KITTLE, executive vice-president and treasurer.

Paul Sunderland, as chairman of the Board, will direct construction, operation and maintenance of manufacturing facilities. He was formerly general superintendent of the lime plants and is at present a member of the board of directors of the National Lime Association. His headquarters have been transferred from Springfield, Mo., to the general office in Kansas City.

Allan B. Sunderland's election to the presidency of the company, to succeed his father, climaxes 24 years of active service, during which period he progressed through almost every department of the company.

L. Kittle has been with the company for 27 years, starting as a clerk in the Chanute plant office in 1919. He will handle matters pertaining to finance, accounting and labor rela-



L. T. Sunderland

tions. He succeeds W. P. Sabin, whose service with the company began in 1908, and who in his new office as vice-chairman of the executive committee will assist L. T. Sunderland.

Permanente Manager

E. H. KENDALL, formerly of Berkeley, Calif., has been appointed division manager of Permanente Cement Company's new Seattle, Wash., plant. Mr. Kendall joined Permanente in 1943 and has been associated with the cement industry since 1933 when he



E. H. Kendall

was employed by Pacific Coast Aggregates Company during construction of the Golden Gate Bridge. Prior to joining Permanente, Mr. Kendall was Southern California division manager for Chemurgic Corp., and later president of U. S. Propellers, Inc., fabricators of airplane parts.

Elected Secretary

W. M. NORTH, assistant secretary of the National Gypsum Co., Buffalo, N. Y., has been elected secretary to fill the vacancy caused by the recent death of Frank E. Davis. B. L. WOORTEN has been named assistant secretary, and ROY LUND, assistant treasurer.

Joins Ready Mix

MARION D. ROSS, district highway engineer of the State of Kentucky, has severed his connection with the State Highway Commission to accept a position with the Ready Mix Concrete Company, Frankfort, Ky. ROY CAMPBELL, with whom Mr. Ross has been associated for some time, will succeed him as district engineer.

Safety Council Officers

J. F. BUFFINGTON, New York Trap Rock Corporation, is the new general chairman of the Cement and Quarry Section, National Safety Council,



J. F. Buffington

elected at the recent Safety Congress sessions at the Stevens Hotel, Chicago. J. R. Boyd, administrative director, National Crushed Stone Association, was elected vice-chairman of the section, and Mrs. Roma M. Turpen, secretary of the National Lime Association, was elected secretary.

L. D. COWLING, Louisville Cement Corporation, Speed, Ind., was appointed News Letter Editor. Committee Chairmen were elected as follows: Frederick B. Hunt, Dewey Portland Cement Co., Davenport, Iowa, Engineering Committee; Lea P. Warner,



J. R. Boyd

Jr., Warner Co., Philadelphia, Penn., Membership Committee; Walter J. Scabil, Missouri Portland Cement Co., St. Louis, Mo., Program Committee; Forrest T. Moyer, U. S. Bureau of Mines, Washington, D. C., Statistics Committee; and F. L. Maus, Alpha Portland Cement Co., Easton, Penn., Visual Aid Committee.

Members at Large elected for the ensuing year are as follows: V. P. Ahearn, National Sand and Gravel Association, Washington, D. C.; H. M. Beatty, The Kelley Island Lime & Transport Co., Cleveland, Ohio; A. J. R. Curtis, Portland Cement Association, Chicago, Ill.; R. A. Dittmar, Universal Atlas Cement Co., New York, N. Y.; Otho M. Graves, The General Crushed Stone Co., Easton, Penn.;



Mrs. Roma Medford Turpen

Johann Norvig, Pennsylvania-Dixie Cement Corporation, Nazareth, Penn.; M. C. M. Pollard, National Gypsum Co., Buffalo, N. Y.; W. M. Powell, Medusa Portland Cement Co., Cleveland, Ohio; Gen. H. A. Reninger, Lehigh Portland Cement Co., Allentown, Penn.; Wallace E. Wing, Marblehead Lime Co., Chicago, Ill.; and A. L. Worthen, The New Haven Trap Rock Co., New Haven, Conn.

New P.C.A. Office

JOHN L. FEAGIN has been placed in charge of the new district office of the Portland Cement Association in Memphis, Tenn., covering activities in Arkansas and Tennessee. Mr. Feagin, an architectural engineering graduate of Alabama Polytechnic Institute, joined the engineering staff of the P.C.A. in 1937 as field engineer in Alabama. Before joining the Association he spent six years in the U. S. Construction Quartermaster's Office, doing architectural planning for the War Department. He was also an appraisal and valuation engineer for Consolidated Edison, Inc., New York,

N. Y. During the war Mr. Feagin served in France, Germany and England for three years and was retired from active duty with the rank of Lieutenant Colonel.

Heads Building Firm

ADMIRAL MOREELL, a past president of the American Concrete Institute, has retired as chief of the Bureau of Yards and Docks, U. S. Navy, and as Federal Coal Mines Administrator, to become president of the Turner Construction Co., New York, N. Y. Admiral Moreell will succeed J. Archer Turner, who has been named chairman of the board of directors. The present chairman, Henry C. Turner, is retiring. Admiral Moreell became chief of the Bureau of Yards and Docks in 1937, and had been a Civil Engineer Corps officer since 1917, when he entered the Navy from civilian life four years after graduation from Washington University. In 1926, as assistant design manager of the Bureau, he wrote a manual on concrete design which is still considered one of the best treatises available on the subject.

In Charge of Sales

EDWIN M. PRETTYMAN, a director of the Annville Stone Co., Conshohocken, Penn., has been elected vice-president in charge of sales, and EARL H. MILLER, also a director, was elected vice-president in charge of operations. THOMAS H. LINEAWEAVER, president of the company, has announced that a brief history of the company is being printed and distributed to those interested in the growth of the company, present plant facilities and development of the large mine from which the limestone is extracted.

Named President

RAYMOND A. MATTHEWS of Baltimore, Md., has been elected president of the Kentucky Stone Co., Louisville, Ky., succeeding Wiley Bryan, who has been interim president since the death several months ago of Sam Parke Burnam. Mr. Bryan will remain chairman of the board. Mr. Matthews previously served as vice-president of Arundel Corp., Baltimore, Md.

A.F.A. Sand Division

DR. H. RIES, former head of the geology department of Cornell University and internationally known sand and clay authority, has been named chairman of the new sand division of the American Foundrymen's Association. Vice-chairman is P. E. KYLA, professor of metallurgy, Cornell University, H. F. SCOBIE, A.F.A. educational assistant, is serving temporarily as division secretary. STANTON WALKER, consulting engineer of the National Industrial Sand Association,

A Tribute to E. J. Krause

By OTHO M. GRAVES

Washington, D. C., has been appointed a member of the grading and fineness committee of the division. Any interested A.F.A. member may register for membership in the new division, which will bring about closer correlation of all technical committee and research activities related to foundry sands and cores.

OBITUARIES

H. DITTLINGER, founder, and for many years president of the Dittlinger Lime Co., New Braunfels, Tex., died September 29, following a minor operation in a San Antonio hospital.

MARK K. LICHTY, comptroller of the Lawrence Portland Cement Co., New York, N. Y., died recently at his home in Kew Garden, Long Island, N. Y. He was 59 years old. Before his transfer to the New York office, Mr. Lichty was employed in the company's Northampton offices. He became associated with the company in 1910.

RICHARD M. MONTGOMERY, owner and president of the Delaware River Quarry Co., Trenton, N. J., died recently at the age of 62.

WILLIAM A. C. SMITH, formerly chairman of the board of the Cleveland Quarries Co., Cleveland, Ohio; president of the Ohio Quarries Co., and a director of the Indiana Lime Co., until his retirement three years ago, died suddenly October 10 at Miami, Fla. He was 69 years of age.

GUY W. JORDAN, chief chemist of the Southern States Portland Cement Co., Rockmart, Ga., died September 6. Born at Dutch Hill, Penn., Mr. Jordan moved to California as a small boy, was educated in the California Public Schools and was graduated from the Leland Stanford University with a degree of Bachelor of Science in Chemistry. During vacations while attending college, he worked in the laboratory of the California Portland Cement Co. and the Calaveras Cement Co., and worked as plant chemist in a Sugar Refinery in Santa Domingo. In February, 1919, he entered the employ of the Southern States Portland Cement Co., Rockmart, Ga., where he remained until his death.

A. ELTON HOLCOMB, widely known in the power shovel and crane industry for more than 40 years and division sales manager for the Koehring Co., Indianapolis, Ind., died October 5, at the age of 68.

CLARENCE E. WAGNER, vice-president of Wagner Quarries Co., Sandusky, Ohio, died recently after a brief illness. He was 55 years old.

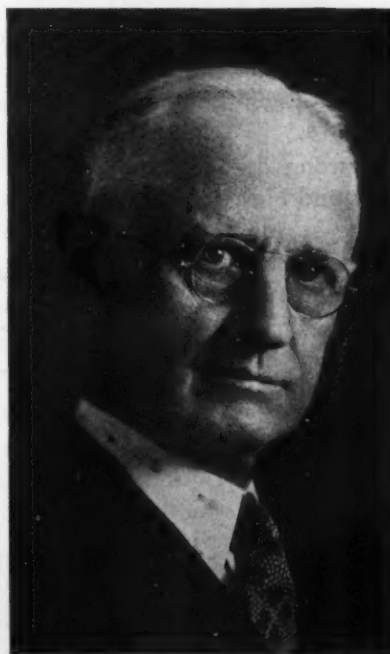
GEORGE L. BERRY, former manager of the Albany Sand and Gravel Co., Albany, Ore., died recently at the age of 44.

HOMER ALEXANDER SOULTS, who with Ed Smith founded the Eugene Sand and Gravel Co., Eugene, Ore., died September 21 at the age of 65.

THE CRUSHED STONE INDUSTRY was saddened and grieved by the death on September 30th, of E. J. Krause of St. Louis, Mo. He actively participated in the formation of the National Crushed Stone Association in Chicago on February 7, 1918. He clearly recognized at that time the value to the industry of an effective trade association, for he had been president of the Illinois Crushed Stone Association. At that time he was elected to the Board of Directors of the National Association on which body he served continuously until his death.

He also served for many years on the Executive Committee, retiring because of ill health. In Louisville, Ky., in 1920, he was elected the second President of the Association, having been preceded by A. J. Blair. He served for one term and was succeeded by John Rice, of Easton, Penn.

"As President, as a member of the Board of Directors and of the Executive Committee, 'E. J.,' as he was affectionately known, brought to Association activities clear vision, sound executive judgment and a charming personality which endeared him to all who knew him. He actively supported the establishment of a testing laboratory in Washington for the Association and continued his helpfulness in all of the research work flowing therefrom. His courtesy and consideration of others was never failing. He was a loyal friend and always sought an opportunity for service to others and to the Association.



E. J. Krause

"E. J." was largely responsible for the growth and development of the Columbia Quarry Co., of which he was President for forty years. The company celebrated this anniversary during the past summer. By the magnificent presents to which all of the Company employees contributed, they evidenced the affection and respect in which he was held.

"He was active in the Agricultural Limestone Industry and participated in the organization of the Midwest Agricultural Limestone Institute of which he was President for several years until the time of his death. He was active in the formation of the Agricultural Limestone Division of the National Crushed Stone Association and was a member of its Board of Directors and Executive Committee from its organization until July, 1946, when he resigned from both bodies because of the condition of his health. He was promptly elected an honorary member of the Board of Directors of the Division.

"E. J.'s vision, courage and business judgment expressed themselves in endeavors unrelated directly to the Crushed Stone or Agricultural Limestone Industries. He purchased a small railroad recently which is enjoying its expected successful operation. He was also interested in citrus fruit and nut groves in the South. Years ago he and his brother, Dr. C. H. Krause, produced coal from Illinois mines. At one time he owned one of the finest farms and dairies in southern Illinois. It is not perhaps commonly known that he was a connoisseur of fine arts, nor that he started his business career as a commercial artist. He enjoyed horseback riding, especially in the very early morning and that avocation did much to maintain his high degree of mental and physical efficiency.

"The Crushed Stone Industry, however, will remember 'E. J.' best because of his affectionate and charming personality, his loyal support of Association activities and his constant helpfulness. Indeed, not only the Association, but the Industry has suffered a severe loss.

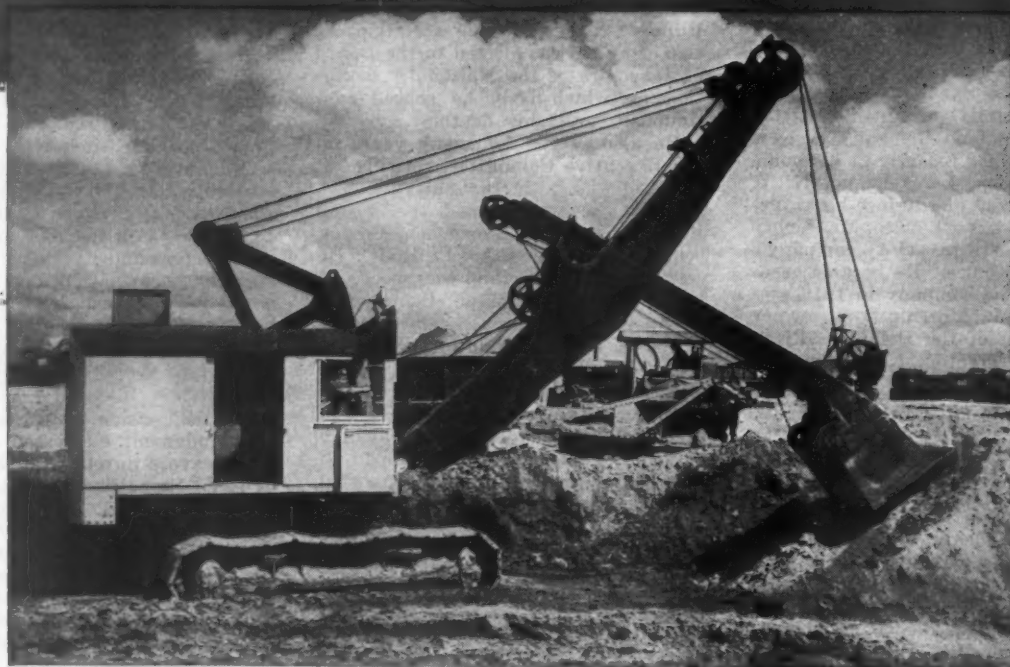
"E. J. Krause was born in Chicago, Ill., August 26, 1871, but his parents moved to St. Louis when he was a small child, and he had ever since been an active citizen of St. Louis.

"He is survived by his wife, Louise; three sons, E. J., Jr., Los Angeles, Calif.; Horace C. and Charles H., and two daughters, Mrs. Robert B. Haas, Columbus, Ohio, and Mrs. Paul E. Lau, Grosse Point, Mich. A third daughter, Mrs. Leighton Shields, Boston, Mass. preceded him in death."

KEEP
ENGINES

CLEAN

assure trouble-free, economical performance



To keep your heavy-duty gasoline and high-speed Diesel engines operating more efficiently, use the oil that keeps engines clean — *Texaco Ursa Oil X***.

*Texaco Ursa Oil X*** has strong detergent and dispersive qualities and high resistance to oxidation. It keeps rings free, assuring better compression and combustion — greater power and fuel economy. It protects alloy bearings, prevents scuffing of rings, pistons and cylinders — greatly reduces engine wear and

maintenance costs.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

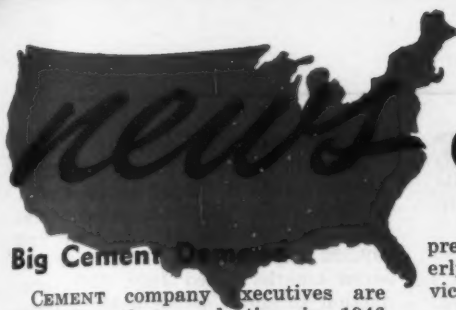
IMPROVED AIR COMPRESSOR OPERATION

Get more efficient performance from your air compressors by lubricating them with *Texaco Alcaid*, *Algol* or *Ursa Oil*. These world-famous oils keep rings free, valves active, ports open and air lines clear — assure fewer repairs and replacements, longer compressor life.



TEXACO Lubricants and Fuels

Tune in . . . TEXACO STAR THEATRE presents the NEW EDDIE BRACKEN SHOW every Sunday night. See newspapers for time and station.



OF THE INDUSTRY

Big Cement Demand

CEMENT company executives are predicting that production in 1946 will rise well over 180,000,000 bbls., as compared with 125,000,000 bbls. Various reasons have been credited for the unusual demand, and scarcity of stocks. One reason for the big backlog was the long coal strike which caused delays in production. There is a tremendous demand from the country for silos, barns, and driveways. Cement block manufacturers also are taking unprecedented quantities of cement due to the substitution of concrete products for lumber.

Challenge Cement Pricing In the West

ALTHOUGH the cement companies won their case against the Federal Trade Commission charges in the decision of the Seventh Circuit Court of Appeals in Chicago, upholding the cement industry's pricing practices, the Department of Justice will prosecute its own cement case filed in Denver, Colo., against several western cement companies. It is believed that the Department of Justice will base its case on a charge that "phantom freight" is involved in the multiple-basing-point pricing arrangements of these companies.

Making Sand-Lime Brick

WASHINGTON BRICK AND LIME CO., Spokane, Wash., has announced that it will erect a plant at Dishman, Wash., for the production of sand-lime brick. Capacity will be about 50 percent of the present common clay brick plant. High-pressure steam curing kiln will be furnished by General Machinery Co., Spokane, Wash., the Union Iron Works will supply the grinding equipment, and Jackson & Church Co., Saginaw, Mich., will ship the sand-lime brick machine. Charles E. Blackburn will be the plant superintendent.

California Rockwool Plant

MINERAL WOOL INSULATIONS CO., is the name of a new company which will utilize slag from the Kaiser steel plant at Fontana, Calif., for its raw material. Offices will be maintained in Los Angeles and San Francisco, California. Plant capacity will be 50,000 tons annually when operations are in full swing. The finished product will be produced through processes recently acquired by American technicians from a survey of the German insulation industry. Harvey H. Head, formerly with Kaiser Co., Inc., will be

president. Chas. W. Hawthorne, formerly with Johns-Manville Co., will be vice-president and general manager.

Sell Gager Lime Plant

THE GAGER LIME MANUFACTURING CO., Sherwood, Tenn., has been purchased by J. M. Gager, Jr., W. J. Mills, and F. M. Ferguson. Mr. Gager announced that the stock of the company had been purchased and that a 30-year lease had been taken on the plant and 5000 acres of land. The new company will have an authorized capital stock of \$50,000.

W. J. Mills is president, F. M. Ferguson is general manager, and J. M. Gager, Jr., is sales manager. Tom Saterfield will continue as secretary-treasurer and Aubrey Garner, plant superintendent, will continue with the new organization in the same capacity. Mr. Gager is the grandson of the founder of the company, and was connected with the company from 1934 until 1940. Plans are now being made for the future expansion of the plant as soon as materials can be obtained.

Cement Power Plant

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio is erecting a new power plant at its Bay Bridge plant. Erection of the new power plant will make it possible to go ahead with plans to remodel the cement plant and install new machinery.

More Asbestos-Cement

PRODUCTION of asbestos-cement shingles and flat sheets has steadily increased during the last six months. August output totalled 555,000 squares, compared with a July production of 550,000 and a February output of 335,000 squares. A square is 100 sq. ft. Eighteen plants are now under production, three existing

plants are planning to increase production, and new plants are being planned in Ohio, Louisiana, Pennsylvania, New Jersey and on the Pacific Coast.

Expand Gravel Zone

THE CITY COUNCIL of Los Angeles, Calif., recently overruled the Planning Commission, and granted an application of John D. Gregg Co., for a zone variance which will permit the company to produce sand and gravel from an additional 115 acres in the Roscoe area of the San Fernando valley. The land is contiguous to ground now being excavated by John D. Gregg and other producers. Rezoning was permitted on the grounds that the area was not suitable for residential construction, and that a serious shortage of building materials was threatened unless activities could be expanded.

Vermiculite Plant

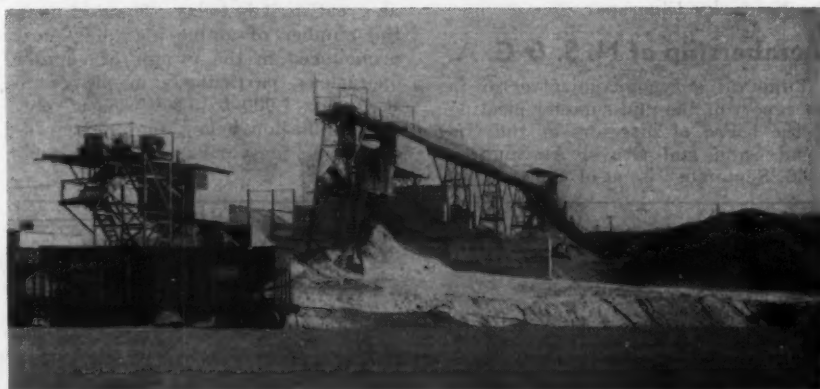
MIKOLITE COMPANY OF ILLINOIS, Chicago, Ill., is now in production at a plant at 1537 Indiana Ave., the former location of the Illinois Central roundhouse. Vermiculite ore is shipped in box cars from Encampment, Wyo., and is expanded at 2000-deg. at the new plant, graded to various specifications, and sacked for sale.

Start Phosphate Operation

INTERNATIONAL MINERALS & CHEMICAL CORPORATION, Chicago, Ill., has started phosphate mining operations at Mulberry, Fla. Another plant is operated by the company at Peace Valley, Fla.

Open Gravel Pit

GARLOW GRAVEL CO., Paullina, Iowa, which was closed down during the war years, has been reopened.



Horizontal belt conveyor, right, sends oversize from screens to stockpile above recovery tunnel and then moves by belt conveyor to railroad cars for use as ballast—Birmingham Slag Co.

Texas Lime Plant

LIMESTONE PRODUCTS Co., Cleburne, Texas has announced through President J. Lambert Lain that a new plant will be built, using limestone quarried from an unusual deposit of great purity about 15 miles from Cleburne, and trucked to the plant site by large, heavy-duty haulage units. The initial calcining equipment will consist of two Cliffe lime producers of 10-ton capacity each. This battery later will be enlarged to include 10 of these units. L. I. M. E., Hershey, Penn., consulting engineers, has had the project under design for more than two years.

Dissolve Partnership

HARRY ZEEFF AND SONS GRAVEL Co., Grand Rapids, Mich., a partnership composed of Harry Zeeff and sons, John and Theodore H., has been dissolved. All property, assets and equipment have been taken over by Theodore H. Zeeff, more familiarly known as Ted. The company name and address will remain the same. The plant produces washed sand and gravel, road gravel and crushed stone. In addition to a permanent washing and crushing plant, the company owns and operates a Universal portable gravel plant. Plant foreman is Henry Van Male who has been with the company 15 years.

Open Magnesite Mine

NATIONAL MAGNESITE Co., Tonopah, Nev., has been developing a deposit of very pure magnesite two miles off the Tonopah-Ely highway, 40 miles west of Ely. A 100-ton rotary furnace has been installed for refining. Roy Redenbaugh is in charge of operations, and Arthur W. Wright of Los Angeles, Calif., is general manager.

Buys Fluorspar Mine

PENNSYLVANIA SALT MANUFACTURING Co., has purchased the Kentucky Babb Fluorspar mine near Salem, Ky. The mine and property were purchased from Roberts and Frazer, active in other fluorspar mining operations as the Kentucky Fluorspar Co.

Membership of N. S. & G. A.

THROUGH a typographical error in the report of the mid-summer meeting of the board of directors of the National Sand and Gravel Association, p. 66, September issue of ROCK PROD-

UCTS, the number of active members of the association was given as 67. This should have been 167; as a matter of fact, at this writing there are 168.

Build Rockwool Plant

GREAT LAKES CARBON Co., Youngstown, Ohio is completing a \$250,000 rock wool plant in this city. Slag from the steel mills will be used for raw material. The plant itself is being constructed of concrete block for walls and wooden roof trusses to conserve scarce steel.

Lime Production 1945

BUREAU OF MINES final figures for 1945 show a decline of 9 percent in sales as compared with 1944. This is not to be taken as reflecting conditions as they exist today as all reports indicate lime plants operating at near top capacity. Sales of "open market" lime totaled 5,920,579 short tons in 1945 as compared with 6,473,563 tons in 1944. Total value of lime sales was \$45,918,468 in 1945 as against \$48,698,162 in 1944. The average price per ton increased 24 cents. Quicklime represented 77 percent and hydrated lime 23 percent of the total, whereas in 1944 the percentages were 80 and 20, respectively. Sales of agricultural lime declined 20 percent. The upward trend in the construction industries was reflected in a 6 percent gain in sales of building lime. The decline in production of war materials without a corresponding gain in peacetime manufacturing industries led to a 9 percent drop in sales of chemical and industrial lime and an 8 percent drop in sales of deadburned dolomite.

The supply situation with respect to chemical and industrial lime continued to be somewhat critical throughout the year; threatened shortages being due primarily to unavailability of labor. The net mill realization per ton of lime sold in the open market in 1945 averaged \$7.76. The 189 producers in 1945 contrast strikingly with the 450 in 1925 when production was only about three-fourths as great as it is today. The decline in the number of active plants is most pronounced in the groups of smaller operations, particularly in the group producing 1,000 to 5,000 tons a year. The tabulation below shows the production in the various tonnage classifications:

Size group (short tons)	Plants	1944 Production		Plants	1945 Production	
		Short tons	Per- cent of total		Short tons	Per- cent of total
Less than 1,000 ..	25	10,929	1	27	11,448	1
1,000 and less than 5,000..	45	120,768	2	38	109,488	2
5,000 and less than 10,000	28	194,032	3	22	153,868	3
10,000 and less than 25,000..	35	532,642	8	29	480,582	8
25,000 and less than 50,000.	35	1,267,897	20	35	1,267,999	21
50,000 and less than 100,000	27	1,758,065	28	24	1,544,176	26
100,000 and over	15	2,569,235	39	14	2,353,108	40
	210	6,473,563	100	189	5,920,579	100

1 Less than 1 percent.

Up Canadian Cement

CANADIAN cement output increased 1,062,671 bbls. in July, highest monthly output for the year, which compares with 1,047,368 bbls. in June, and 849,522 bbls. in July, 1945. For the seven months ended July, 1946, production totalled 5,908,875 bbls., compared with 3,668,268 bbls., in the corresponding period in 1945.

Buy Tile Plant

CHROMITE Co., INC., Monroe, Mich., is the name of a new company organized to manufacture and sell chromite tile which was formerly manufactured by U. S. Gypsum Co., in a plant located at Quincy, Ill. The U. S. Gypsum Co., decided to discontinue the manufacture of this specialty and offered it to Arthur R. Helf, formerly one of the largest distributors.

Lehigh Improvement

LEHIGH PORTLAND CEMENT Co., Metalline Falls, Wash., plant is making improvements which will increase the output of special cements, according to W. G. Perrow, district manager. These special cements include high-early-strength and mortar cements.

Kerford Team Wins

KERFORD QUARRY Co., Atchison, Kans., has sponsored a softball team which recently won the Kansas state championship. This team will represent the State in divisional tournaments, the winners to appear in Cleveland for the national championship games.

Build Two Cement Plants

ERLE P. HALLIBURTON, president of Halliburton Oil Well Cementing Co., Duncan, Okla., who recently announced that a cement plant would be built at Corpus Christi, Texas, also advises that a company will be organized to build another cement plant at Chichirivichi, Venezuela.

Start Ready Mix Plant

HOYLE BROTHERS, INC., Iron Mountain, Mich., was granted permission by the city council recently to construct a ready mixed concrete plant. The plant will be erected near the city's rock crushing plant.

Start Gypsum Plant

UNION PLASTER Co., has started production of building plaster and agricultural gypsum at its newly completed plant at Phoenix, Ariz. Raw materials come from the Winkelman gypsum deposits just outside Phoenix.

Buy Quarry

LESTER HARTY, Cedar Falls, Iowa and Martin Krebs, La Porte City, have purchased the John McChane quarry near Brandon, Iowa. About \$40,000 has been invested in equipment.

Pavement Yardage

AWARDS of concrete pavement for September and the first nine months of 1946 have been announced by the Portland Cement Association as follows:

	Square Yards Awarded	
	Sept. 1946	First 9 Mos., 1946
Roads	2,503,449	19,031,463
Streets and		
Alleys	1,250,178	9,288,771
Airports	544,068	2,523,790
Total	4,297,695	30,844,024

Permanente's Seattle Plant

THE PERMANENTE CEMENT Co., has announced that its \$500,000 plant in Seattle, Wash., is now in operation. The Seattle division, which has a storage capacity for 80,000 bbls., will be under the direction of Henry J. Kaiser. Other interests include ship-building, sand and gravel and ready mixed concrete, and just recently aluminum production was started in Spokane, Wash.

At the Seattle plant bulk cement will be pumped from ships into silos by Fuller-Kinyon pumps. Under the silos are tunnels used to house pumping equipment and transfer cement from silo to bag packer bins or bulk loading bins. The packhouse contains one

four-tube packing machine and bagged cement will be transferred by belt conveyors to railroad cars or the storage warehouse. The new division will be under the direction of E. H. Kendall. Permanente Cement Co., is owned by the following stockholders: General Construction Co., Seattle (J. A. McEachern, president); Morrison-Knudsen Co., Inc.; Pacific Bridge Co.; J. F. Shea Co., Inc.; Claralel Co.; The Utah Construction Co.; Henry J. Kaiser Co., and The Kaiser Co.

Portable Compressor-Drill

IN 1940 the Marquette Cement Manufacturing Co., Chicago, Ill., worked with the manufacturers in designing a portable compressor-drill unit. This unit has worked out so satisfactorily that two more units have been delivered for operation at the Oglesby, Ill., quarry.

As shown in the illustration, this unit consisted of two 210-cu. ft. compressors capable of producing a total of 460 cu. ft. of air per minute. Compressors were mounted on a D-8 Caterpillar tractor, utilizing the tractor Diesel engine to power the equipment through a belt drive attached to the rear take-off. Two wagon drill assemblies were mounted on a steel frame extending from the tractor. This frame can be hydraulically lowered for the operation of the drills or raised to permit free movement of the tractor. The two compressors are Davey Model 420 Track-Air units. Two Davey Model 210-C "Auto-Air"

assemblies have been ordered for mounting on K-7 International trucks.

Pricing Orders

(Continued from page 49)

a number of areas. Price Brothers Co., Dayton, Ohio received a blanket increase of 25.5 percent on all plain concrete pipe, reinforced concrete pipe and concrete piling. An increase of 21 percent was obtained for concrete floor and roofing slabs. U. S. Concrete Pipe Co., Cleveland, Ohio has received authority to increase prices of pipe 7.5 percent to all classes of purchaser. Cincinnati Concrete Pipe Co., obtained an increase of 9 percent over the maximum prices in effect on May 16, 1946. Standard Concrete Pipe Co., was granted authority to up prices of pipe by 19 percent over the prices in effect on June 13, 1946. Independent Concrete Pipe Co., Indianapolis, Ind., was granted authority to increase prices 4.5 percent over June 13, 1946 prices.

A large number of area price increases have been granted concrete products producers. Heavy weight concrete block in the Southern California area have been increased in price. Price per thousand for 4-x 2-x 6-in. block are \$16; for 8-x 8-x 12-in., \$105; 8-x 8-x 16-in., \$113; and 12-x 8-x 24-in., \$217. A complete set up of prices for many other sizes also were listed. Additional charges of 10 percent are allowed for jams, bull nose, round corners, bond beams, etc.

COMING CONVENTIONS

American Institute of Mining and Metallurgical Engineers, Annual Meeting, Waldorf-Astoria Hotel, New York, week of March 17, 1947.

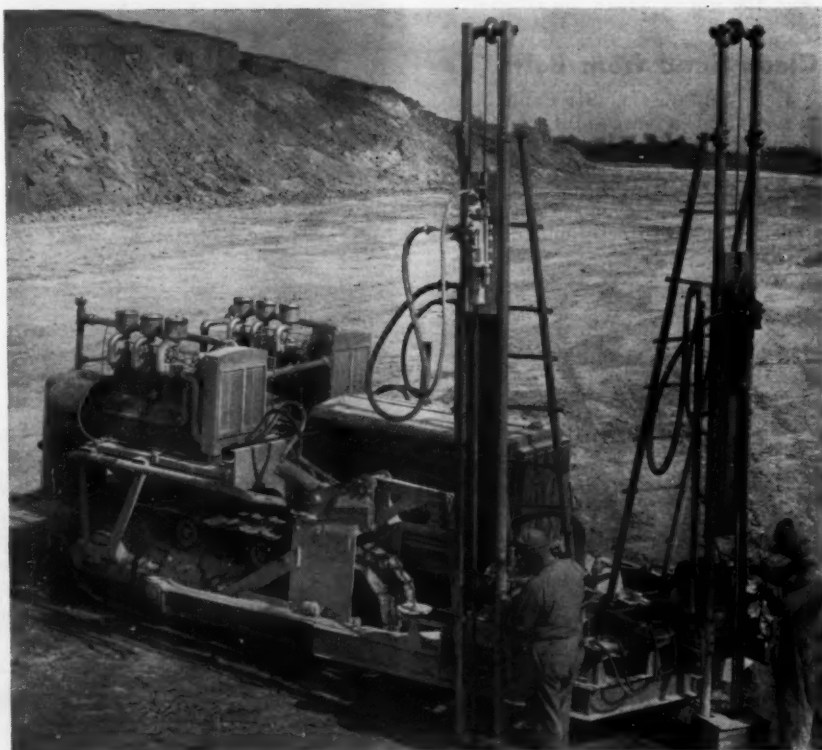
American Road Builders' Association, Annual Convention, Palmer House, Chicago, Ill., February 17-20, 1947.

National Concrete Masonry Association, Convention and Exposition, Hotel Sherman, Chicago, Ill., week of February 17, 1947.

National Crushed Stone Association, Annual Convention, Edgewater Beach Hotel, Chicago, Ill., January 27-29, 1947; Agricultural Limestone Division, January 30-31, 1947.

National Ready Mixed Concrete Association, Annual Meeting, Biltmore Hotel, Los Angeles, Calif., week of March 3, 1947.

National Sand and Gravel Association, Annual Convention, Biltmore Hotel, Los Angeles, Calif., week of March 3, 1947.



Compressor-drill combination mounted on tractor for mobility

HINTS *and* HELPS

PRACTICAL IDEAS DEVELOPED BY OPERATING MEN

Screen Covers Crusher

HALLETT CONSTRUCTION Co., St. Peter, Minn., has utilized a discarded circular screen section as a protective covering for a jaw crusher to prevent

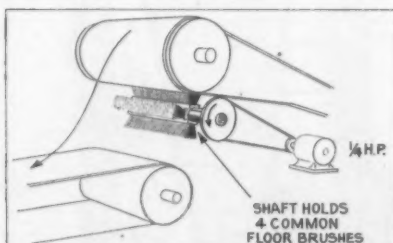


Screen guard over jaw crusher opening

injury to workmen from stone that might "pop out" of the jaws. In the accompanying illustration may be seen the guard above the crusher.

Clean Sand from Belt

J. L. SHIELY Co., St. Paul, Minn., has devised a successful method of cleaning the underside of a conveyor belt carrying sand so that sand sticking to the belt will not be carried along and spread over the entire area under the belt. Directly under the dis-



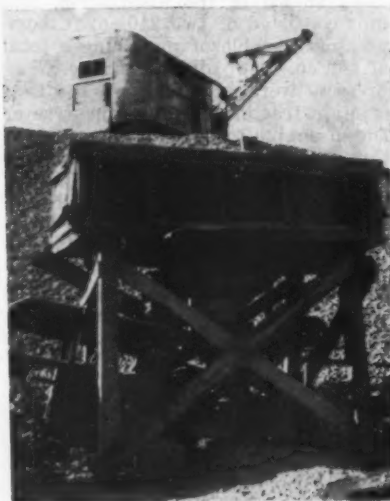
Showing how power-operated brushes have been installed under belt to remove sand which sticks to the underside of belt

charge end of the conveyor, a shaft has been installed to which four common floor brooms have been attached, as shown in the illustration. The shaft rotates in a direction opposite to the belt, and it is powered by a 1/4-hp. motor. Wet sand sticking to the belt is swept off by the brooms into one

pile where it can be cleaned up easily and recovered rather than have it spread over the entire area under the belt.

Auxiliary Plant

DULUTH BUILDERS SUPPLY Co., Duluth, Minn., has installed a portable crushing and screening plant to process 1 1/2-in. gravel into a 1-in. size instead of changing the screening arrangement on the main plant. During recent years, normal production has been concentrated on the 1 1/2-in. gravel, for use as a concrete aggregate. A huge stockpile of this product has been built up due to the small



Shovel loads 1 1/2-in. gravel from stockpile to hopper

amount of construction during the war years. Recent demand for a top size of 1-in. material prompted the

installation of the portable plant instead of changing the arrangement on the main plant since with the upsurge of construction, both sizes will be in demand.

Repairing Kiln Shells

LAST WINTER the Warner Co., found it necessary to repair one of its kilns at Bellefonte, Penn., and carried out this work by some ingenious methods.

The rotary kiln is 9- x 175-ft., with a total rotating weight of 400 tons. About 60 ft. of kiln shell was replaced. Some difficulty was experienced in making the repairs as the kiln was housed in a narrow building about 30 ft. above the main floor.

In order to cut out pieces of the shell, it was necessary to support the remaining sections, and due to the heavy weight and height above ground this was no little job. Two temporary rows of steel columns were set up along the kiln, with large I-beams across the tops. A sort of trolley beam, supported by these cross members, ran the length of the kiln a few feet above it. From the trolley beam heavy chain blocks were attached and small steel rings were welded on the kiln shell so that the chain block hood could pick up sections of the load.

Since only a few chain blocks were available, the weight was transferred to a series of 1 1/2-in. diameter steel rods with turn-buckles. These rods were attached to the trolley beam and welded to the top of the shell. The turnbuckles made it possible to adjust nicely the pieces of shell to get proper alignment. After each piece of shell was properly aligned with the adjacent piece, the new piece was electrically welded to the adjacent one.



Conveyor from hopper feeds 1 1/2-in. gravel to portable plant for recrushing

Crusher Shock Absorber

FRANK FLINN ROCK AND CONSTRUCTION Co., St. Louis, Mo., has placed old rubber tires on top of gyratory crusher casting to absorb the shock



Old tires protect gyratory crusher from stone impact

caused by stone fed to the crusher over a long chute from the truck discharging point. As shown in the illustration, rock that otherwise would hit the casting with damaging force, hits the tires instead and falls into the crusher.

Electrical Control for Dust Collector

By E. M. DIEHL

Keystone Portland Cement Co.

DUST COLLECTION is a problem which is common to all cement plant operators. Our company has been op-

erating dust collecting equipment from the time the plant started operation. Anyone having a "dust collector" problem will appreciate the simplicity and lower maintenance cost which the system illustrated in the wiring diagram and sketch affords. We have tried various schemes and found the one described herein to give very satisfactory results.

A $\frac{1}{2}$ -hp., G.E. type KC, single-phase, 220-volt gear motor operating at 58 r.p.m. pinion speed drives the shaft on which cams are mounted to shake the dust bags. With the use of an Eagle timer and relays, this motor is controlled along with the 25 hp. motor driving the blower fan. During a cycle of operation, the blower runs 58 min. every hour, then stops for two minutes while the shaker motor operates for two minutes. After the shaker stops, the fan again starts for another 58-min. run while the shaker is at rest for this 58-min. period. The electrical wiring diagram and sketch are self-explanatory.

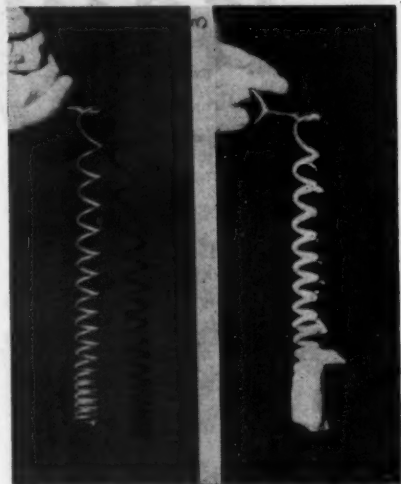
Slurry Viscosimeter

By J. A. SLEGTEN

WATER RATIO alone will give no reliable control in keeping slurry viscosity within proper limits as to its pumping or screening ability and economy in drying. This is particularly true with chalk and clay as the viscosity fluctuates considerably.

Our laboratory viscosimeter is rather slow, but for testing Hummer and Nordberg vibrating screens no other more rapid testing equipment was available. This suggested the idea of a progressive spring made out of a spare part of a Bates packing machine. The two illustrations tell the story. This spring is 212 mm. in length with a wire diameter of 2.5 mm.

One of the illustrations shows the clean spring viscosimeter before dipping into slurry. The other shows the spring viscosimeter after dipping in slurry. Viscosity 8 indicates that eight of the 18 spirals remain choked

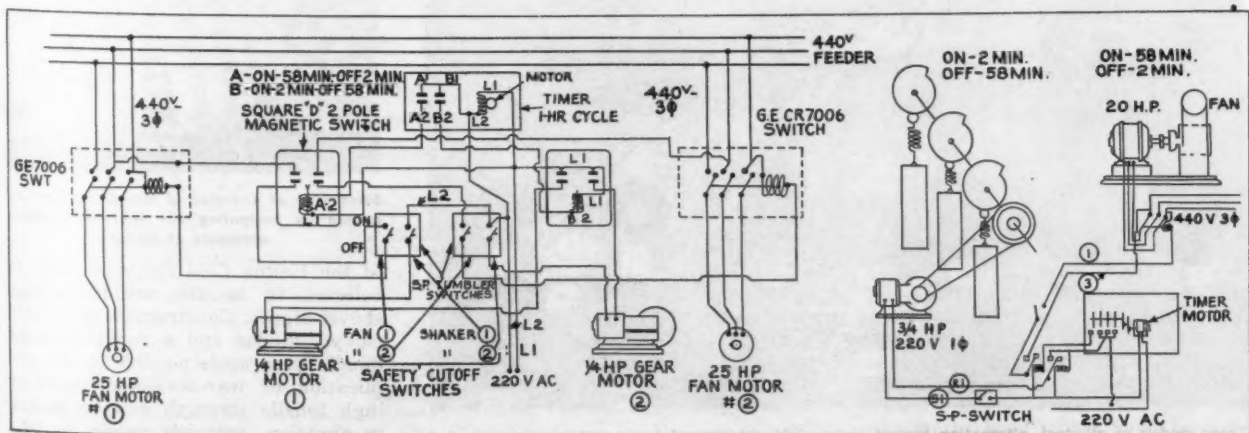


Left: Spring viscosimeter before dipping in slurry. Right: Spring viscosimeter after dipping in slurry. Spiral spacing, center to center, graduates from 4 mm. at the bottom up to 26 mm. at the top

with slurry. The ninth is too wide to be bridged by the surface tension of the slurry. It only requires a few seconds for the operator to count the open spirals. For constancy in testing, the spring viscosimeter should be dipped in water first before making a test of the slurry.

British Cement Prospects

REPORTS from the British cement industry indicate that the vast rebuilding and modernization program is not making as much progress as anticipated. The view seems to prevail in certain quarters that the building program will not reach its peak until the third year of the postwar period. It will then be necessary to have more cement production capacity available, and plans are now being drawn up to anticipate these needs. A new plant to be built in North Wales is under consideration. It is expected that the concrete products industry will be called upon to supply large quantities.



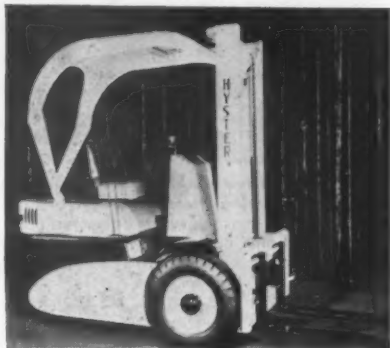
Electrical wiring diagram and sketch showing how timer and relays control motor driving cams shaking dust bags and also blower fan motor



MACHINERY

Fork-type Lift Truck

HYSTER Co., Portland, Ore., has brought out a 4000-lb. fork-type lift truck, termed the Hyster 40. This



Fork-type lift truck of 4000-lb. capacity

unit, now in production at the Danville, Ill., plant, is the seventh pneumatic tire model. These models range from 2000 to 30,000 lb. capacities. The new model uses a Wisconsin air-cooled motor, trunnion steering, and 7.00 x 12 pneumatic tires.

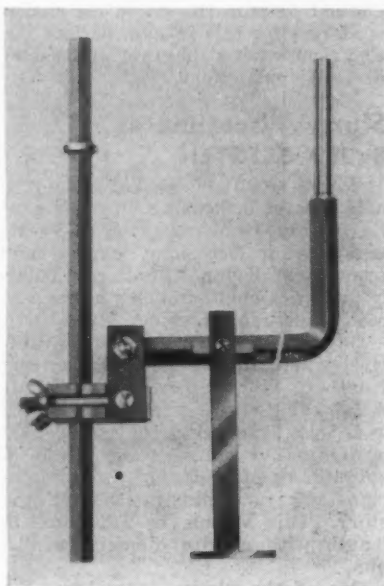
All-Steel A-C. Motor

WESTINGHOUSE ELECTRIC CORPORATION, Pittsburgh, Penn., has developed a new alternating-current motor, known as the Life-Line, which is said to be 35 percent smaller in size than its predecessor of equal horsepower. It is claimed that starting torques have been increased as much as 134 percent per lb. of motor and maximum torques increased as much as 116 percent per lb. of motor. It is said that bearings will need no atten-

tion for at least five years, and vibration and noise have been reduced to low limits. Improved insulating materials and winding techniques will result in fewer insulation burn-outs. Provision also has been made for better cooling of the motor.

Drill Steel Ejector

UNIVERSAL PNEUMATIC TOOL CO., St. Louis, Mo., has developed a drill steel ejector which is designed to save a considerable amount of time and



Device to remove drill steel quickly

labor for the driller crew. The operator simply attaches the ejector clamp to drill steel, removes hammer

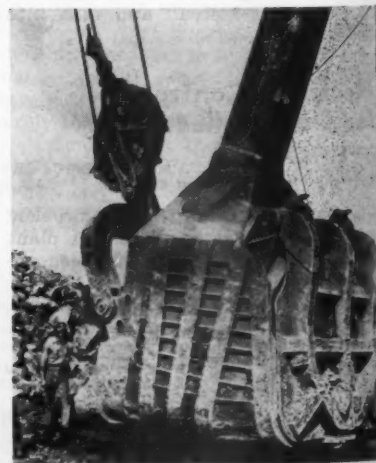
from drill steel shank and places hammer on round shank of ejector, and turns on air. The steel is quickly loosened, ready for more drilling.

Hard-surfacing Electrode

AMERICAN MANGANESE DIVISION, American Brake Shoe Co., Chicago Heights, Ill., has developed Amsco Resistwear, a hard-surfacing rod. This high carbon, chrome, molybdenum, shielded arc electrode can be deposited on any ferrous base metal, according to the manufacturer. It will produce, as deposited, hardness of approximately 400 to 500 Brinell, depending upon the degree of dilution from the base metal. This rod is said to be an excellent substitute for manganese steel parts on abrasion applications where there is not sufficient impact to develop the full work-hardening properties for which austenitic manganese steel is well known. It is available in coated form only for a-c. and d.-c. application in 1/8-in., 5/32-in., 3/16-in., and 1/4-in. diameters by 14 in. long.

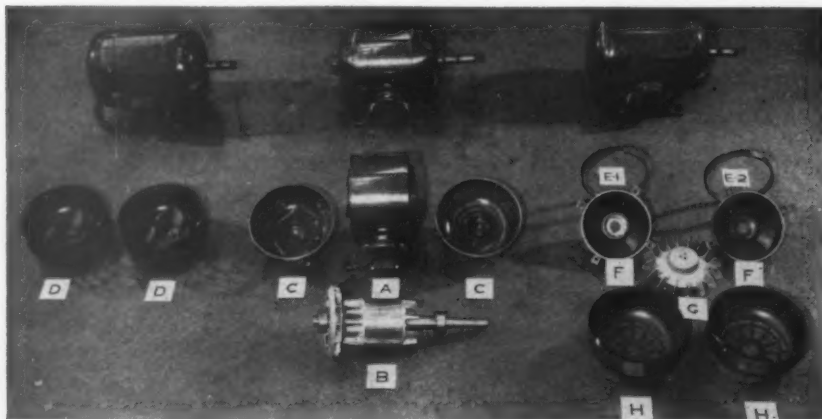
Largest Shovel Dipper

MARION POWER SHOVEL CO., Marion, Ohio, has announced that it recently equipped a Marion type 5561 shovel



Some idea of the size of the dipper may be gained by comparing the operator standing alongside of dipper

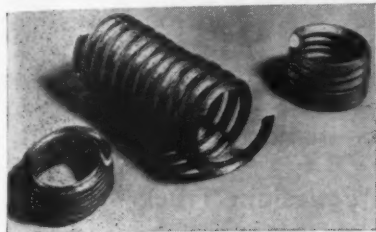
of the Hanna Coal Co., with what is believed to be the world's largest shovel dipper. Construction of the 40-cu. yd. dipper and a newly-designed handle were made possible by the application of war-developed steels of high tensile strength and resistance to abrasion, reducing weight by 30,000 lbs.



Three models of all-steel, alternating-current motor: left, splashproof type; center, open-protected type; right, fan-cooled type. Rotor and stator are the same in all three types.

Asbestos Packing

RAYBESTOS-MANHATTAN, INC., Manheim, Penn., has brought out a V-shaped packing for steam or air rods, valve stems, boiler feed-plungers, hydraulic rams, etc. It is made from woven asbestos cloth frictioned with high heat resisting compound and molded into a V-shape. The V-shape insures automatic sealing of high or low pressure, with a minimum of surface friction on the pressure stroke and no friction on the return stroke.



Showing sections of V-shaped packing

draulic rams, etc. It is made from woven asbestos cloth frictioned with high heat resisting compound and molded into a V-shape. The V-shape insures automatic sealing of high or low pressure, with a minimum of surface friction on the pressure stroke and no friction on the return stroke.

Add V-Belts

QUAKER RUBBER CORPORATION, Philadelphia, Penn., has added industrial V-belts to its line of rubber products, according to a recent announcement. Five special features claimed for these belts are: flexibility, heat resis-

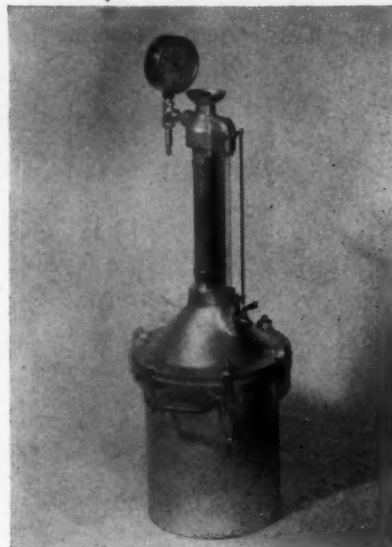
tance, abrasion, resistance, balance, and manufacture with new equipment.

Demountable Gravel Plant

LINK-BELT Co., Chicago, Ill., has designed a standardized, demountable sand and gravel preparation plant to provide economical operation for a sizable paving job and removal to new locations by comparatively simple dismantling and reassembly. Equipment includes belt conveyors, scrubber, crusher, double-deck vibrating screens, sand dewatering screw conveyor, and the necessary power drive units.

A typical handling system for making one to three finished sizes of gravel and one grade of sand is shown in the sketch. The stockpiling arrangement can take care of about 6000 tons storage of each size without re-casting. In the center of the grouping of storage piles, there is a batch bin, or mixing plant, with a crawler crane operating in a circle to feed from any pile to bin as required. To facilitate moving, the belt conveyors are mounted on steel frames made up in 20-ft. sections, with suitable legs for bolting and unbolting. The scrubber can be lifted from trunnions as a unit with the frame and drive. Other

units can be similarly removed. All units of structure are sectional, providing means for quick dismantling.



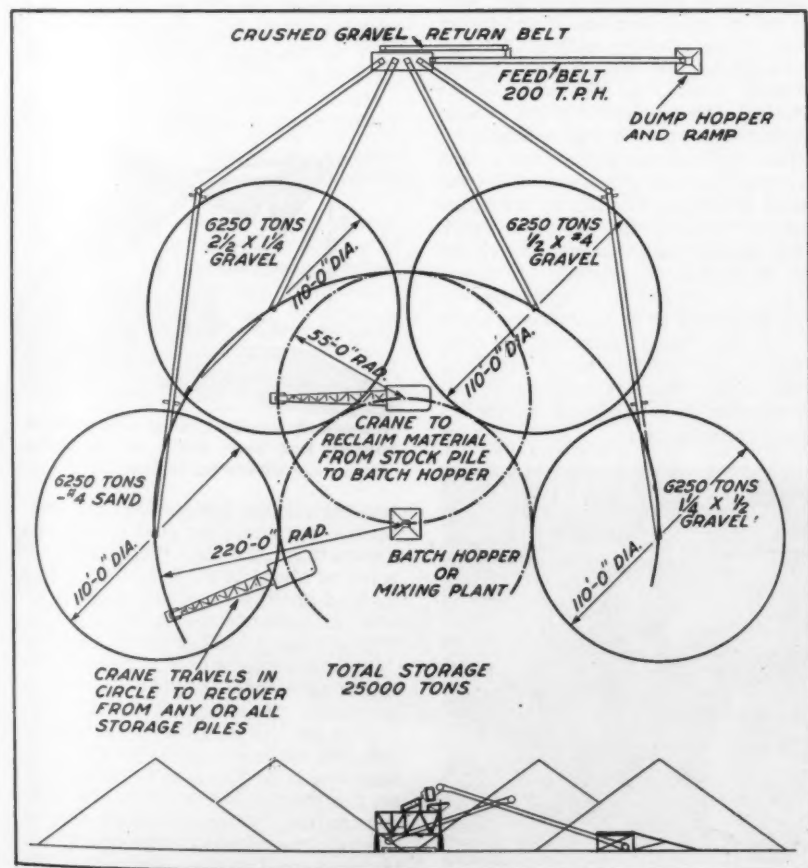
Air Entrainment Gage

Air Entrainment Gage

GEORGE J. HECK, St. Paul, Minn., is manufacturing the air-entrainment gage shown in the illustration which was developed under the guidance of Wm. H. Klein, formerly with Pennsylvania-Dixie Cement Corporation and Stanton Walker of the National Ready Mixed Concrete Association.

This apparatus measures the air content of concrete directly without any field computations. The air content is read on the graduated brass scale where each principal division represents one percent of air and the minor divisions 1/10 percent.

The following steps in determining air-entrainment with this apparatus are as follows: 1. The container is filled in three equal lifts, rodding each lift 25 times; 2. Settle the concrete and remove large air bubbles by tapping the sides ten times with block of wood; 3. It is not necessary to screed off the top surface as screeding will smear top flange of container which must be kept clean, and tapping the container and adjusting the level to the top of the rim by eye is sufficient; 4. Place the 3-in. diameter metal disc in center of concrete surface and tap slightly to secure bedding; 5. Bolt two sections together; 6. Insert copper tube and funnel assembly in upper plugged opening and fill the apparatus with water, then remove tube and adjust the water level to zero on the scale; 7. Be sure all openings are tightly closed and then apply 30 lbs. gage pressure with tire pump, but there must be no leakage of water if accuracy is to be attained; 8. Read the percent of air directly, then release all pressure by removing top plug and read water level which must be subtracted from the air reading.



Typical demountable sand and gravel plant layout

Electric Lift Truck

BARRETT-CRAVENS Co., Chicago, Ill., is now in production on its Powerox electric lift truck. This truck, which handles loads of 4000 to 6000 lbs., is



Battery-powered lift truck

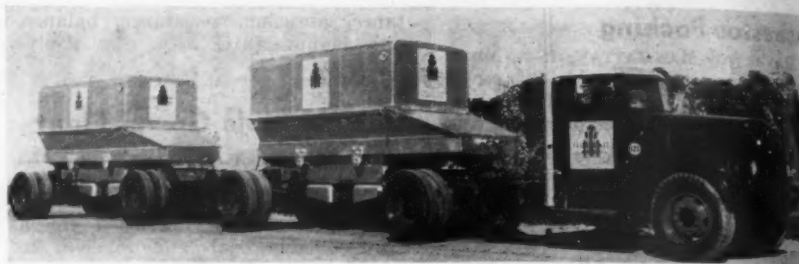
powered by a heavy duty, high torque, compound wound motor driving a large diameter, wide face front wheel through a double reduction precision roller chain drive. An automatic automotive type brake stops truck with handle in either vertical or horizontal position. A 4-in. vertical lift is accomplished in four seconds with an aircraft type hydraulic gear pump direct-connected to a high torque electric motor. Wheels turn on Timken tapered roller bearings. Control buttons are grouped at the top of the steering handle.

Four-Wheel Drive Truck

CHRYSLER CORPORATION, Dodge Division, Detroit, Mich., is now producing a four-wheel drive truck, known as the Power-Wagon, for postwar civilian use. This unit, which is an adaptation of a military vehicle made in large quantity, has a 94-hp. engine,



Four-wheel drive truck with dual power take-off



Bulk cement truck-trailer train hauls 51,230 lbs.

four-speed transmission, two-speed transfer case, and conventional closed cab. It is a one-ton general purpose truck for both "off-the-highway" and highway operation, and has been designed for a maximum payload of 3000 lbs. A dual power take-off is available to deliver 536 r.p.m. at the tail shaft to operate many types of machinery or drive a 9-in. diameter belt pulley drive to power many items of auxiliary equipment at a belt speed of 3125 f.p.m. The power take-off also operates a front-mounted power winch of 7500-lb. capacity.

Cement Cooler

THE NORTHERN BLOWER Co., Cleveland, Ohio, has patented its Norblo cement cooler which employs an application of the dust collection principle to the air cooling of cement during the grinding process. With clinker entering the grinding mills at 350 deg. or raised to that temperature by the grinding itself, the finished cement entering the pump can be easily brought down to 200 deg. or lower.

This cooler becomes part of a dust collecting system which cleans up the entire department while at the same time, air cooling the ground cement. With patented attachments, the cooler can be added to existing air separators to bring the temperature of fines down to any desired degree while at the same time reducing the temperature of tailings being returned to the mills. This prevents the grinding process from building up its internal temperature.

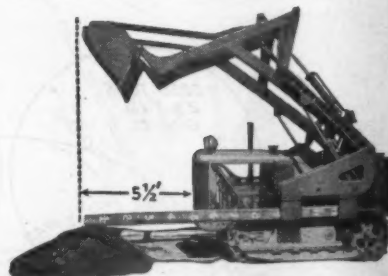
Magnesium Truck-Train

THE PERMANENTE METALS CORPORATION, Oakland, Calif., has constructed an all-magnesium truck train capable of hauling a payload of 51,230 lbs. The unit shown in the illustration was built for the Permanente Cement Co., to haul bulk cement. It is 60 ft. long, consisting of a semi-trailer and trailer pulled by a 1946 Peterbilt tractor, powered by a 150 hp. Cummins Diesel engine. Weight of the entire train with a full load of fuel oil is 25,570 lbs. A maximum gross load of 76,800 lbs. is allowed by the State of California vehicle code, giving the new carrier a possible payload of 51,230 lbs.

Tractor Loader

DROTT MANUFACTURING CORPORATION, Milwaukee, Wis., has designed a front-end tractor loader which is said to have an extremely high lift and reach.

It is designed for mounting on Oliver Cletrac crawler tractors, and



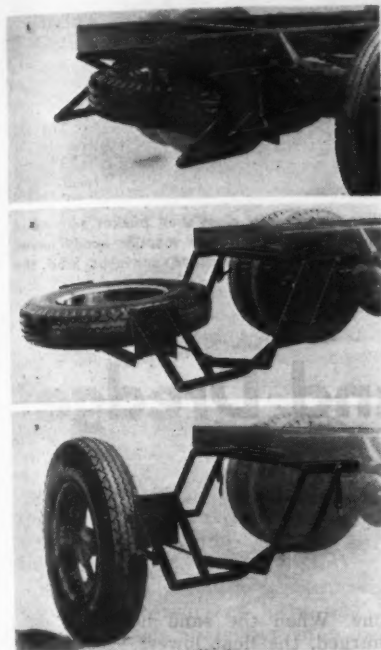
Hydraulically operated shovel is rolled back, bringing load back closer to the tractor, eliminating spillage

has been in use for loading loose materials, for stripping coal mines, and excavating hard clay. The loader has a lift of about 10 ft. 8 in., and dumps its load about 5 ft. ahead of the radiator, an advantage in loading trucks. The standard bucket has a capacity of 1 1/4 cu. yd., but a light material handling shovel of 1 3/4 cu. yd. is available. It is hydraulically controlled by the operator by finger-tip controls while tractor is in motion or standing still. The load is not carried on the tractor but is semi-skidded to destination. When breaking out of the cut, the weight of the entire load is transferred to the shoes which are making ground contact.

NEW MACHINERY

Truck Tire Carrier

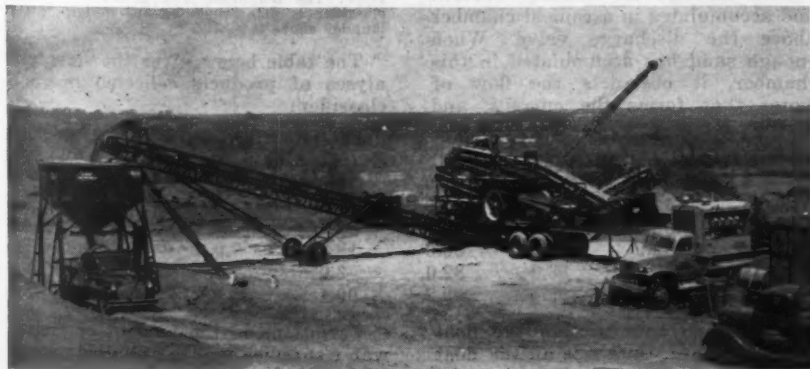
T.E.D. CORPORATION, Los Angeles, Calif., is now in production on a truck tire carrier which, it is claimed, eliminates lifting heavy wheel in mak-



Top to bottom: (1) Tire and wheel securely clamped under chassis; (2) carrier extended so tire clears truck body; (3) carrier cradle tilted so tire rests on ground ready to be detached and rolled away

ing tire changes. The illustration shows how the tire and wheel assembly is raised into position under the truck chassis.

To change a tire the holding clamps are released and the cradle portion of carrier which holds the tire and wheel is pulled out and away from truck body to a position where the tire is clear and can be tilted upright while it is still attached to the carrier. The tire then rests on the ground, and when detached from carrier by the removal of holding clamp, it may be rolled to the wheel requiring replacement. The flat is rolled to the carrier

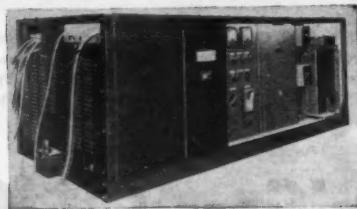


Diesel-electric portable crushing and screening plant

and clamped to the cradle while in an upright position, after which it is tilted on cradle swivel to horizontal position, pushed back under chassis in carrying position, and securely fastened there with positive clamps that prevent vibration when on the road.

Portable Rectifier

GENERAL ELECTRIC Co., Schenectady, N. Y., has redesigned its line of portable, sealed-ignitron, mercury-arc rectifiers for mining service. The new



Rectifier d.-c. switchgear car of train comprising a.-c. switchgear car, and transformer car

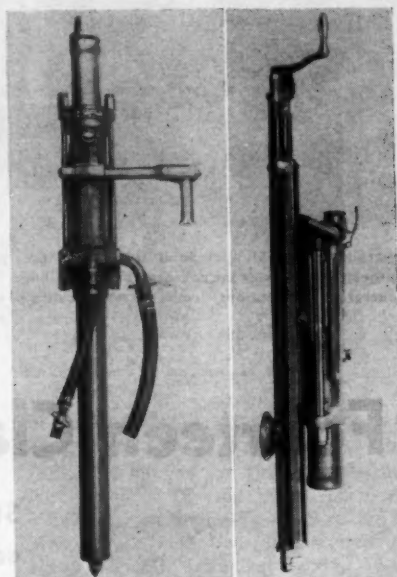
equipment is a completely integrated, compact a.-c. to d.-c. substation, mounted on mine-car type wheels so that it can easily follow the load center as the working face moves away from the portal. It consists of an a.-c. switchgear car, transformer car, and rectifier car. The unit is only 48 in. high. These units are available in ratings from 75 to 750 kw.

Diesel-Electric Portable

COLORADO CONSTRUCTORS, INC., Denver, Colo., operates near this city a Pioneer 46-VE Diesel-electric duplex crushing and screening plant which has some interesting features. A Caterpillar D-17-Y drives the jaw crusher through a 12-in. wide flat belt and also drives an Electric Machinery Co., generator supplying electric power to motors on the vibrating screen and conveyors. The roll crusher is driven by V-belt from the jaw crusher. An hydraulic type cradle truck supports the delivery conveyor. By means of the bottom deck feed, 100 percent fractured chips are produced simultaneously with coarse aggregate.

Drifters—Stoppers

WORTHINGTON PUMP AND MACHINERY CORPORATION, HARRISON, N. J., has announced a new self-rotating stopper,



Left: Self-rotating stopper for use in mining. Right: Drifter model which is mounted as a hand crank machine. Also available in models which are air motor driven

Model WR-31, for use in mining operations, and a complete line of drifters for mining, quarrying and general construction work.

The Model WR-31 stopper has the holding handle placed above the center of gravity which, it is claimed, gives the machine good balance and makes it easy to operate. Four-pawl rifle bar rotation is used with air thrown pawls set in a pawl housing in the cylinder. The rifle bar has a ratchet at the lower end which engages the pawls on the back stroke of the piston. A shield type threaded chuck is furnished for all sizes and sections of shankless drill steel, and a constant stream of air through the air tube keeps water and sludge out of the front end.

The line of drifters are made in three sizes, 3-in., 3½-in., and 4-in. cylinder diameters. Each drifter may be mounted as a hand crank machine.

Dust Collector

THE NORTHERN BLOWER Co., Cleveland, Ohio, has brought out an axial flow centrifugal dust collector which is said to eliminate most of the piping ordinarily required. It can be placed directly into any straight line of piping without alterations, and as all air has parallel flow, there are no turns or elbows and no change of direction of air flow. High efficiency, plus simplicity and compactness permitting strategic location, especially with relation to stacks, are claimed for this collector.

Recovering Fines



Overall view of Stewart Sand & Material Co., plant at Kansas City. To the right may be seen swivelling crane with clam-shell bucket to unload barges; two crawler cranes are for stockpiling. The steel bin in foreground of plant holds a special minus 200-mesh sand for meeting ready mixed concrete specifications; concrete silos contain concrete sand. Coarse aggregate is brought into the plant over the inclined conveyor, and the cement silos may be seen to the left of the plant

Fourteen Classifiers On Sand Dredge

Stewart Sand and Material Co.,
equips dredge with two banks of
seven hindered settling classifiers

PRODUCERS of specification concrete sand dredged from the Missouri river, have long been troubled with two major problems: impurities and an excess of the 30- to 50-mesh size. The latter problem has been handled very efficiently in the past by the Stewart Sand and Material Co., Kansas City, Mo., through the installation of Shaw hindered-settling classifiers on the dredge. A recent installation of Eagle screw washers under the classifiers has now reduced to a satisfactory minimum the impurities, chiefly lignite.

Prior to the installation of the screw washers, about one half of one percent of the product was lignite contaminated. Although final figures on the sand analysis are not complete, the percentage of impurities has been decreased to an extremely small amount, according to preliminary tests.

Illustrated herewith is a sketch of the dredge that has been in operation for a number of years. Sand classification in all of its refinements has long been emphasized in plants of the Stewart Sand and Material Co. The classifiers on the dredge were designed by John Prince, president of the company, who collaborated in the development and design of the Shaw classifier with Edmund Shaw, late editor of *ROCK PRODUCTS*.

Sand is excavated by a 12-in. Amasco pump with the aid of a 50-ft. Eagle Swintek cutter and delivered over a 4- x 8-ft. stationary scalper screen consisting of $\frac{3}{4}$ -in. bars spaced 3-in. apart. Trash is scalped off into the river. The product passing the

scalper is laundered over a chute provided with screen cloth having $\frac{3}{8}$ -in. sq. openings, allowing the fines to pass directly to the classifiers. Oversize material enters a revolving screen where the plus 5/16-in. product is scalped off into the river, the troughs laundering to the classifiers.

Seven Classifiers Recover Specification Sand

The product entering the classifier launder passes over two banks of seven classifiers (five Shaw and two standard cones in each bank), each successive unit collecting a finer product, with the coarsest sand settling in the first cone, the finest sand in the farthest cone, with intermediate sizes recovered in the other cones. Overflow from the last pair returns to the river.

Discharge from the cones is controlled by the amount of sand that passes through an annular current and accumulates in a conical chamber above the discharge valve. When enough sand has accumulated in this chamber, it obstructs the flow of water that forms the current, and

cone. When the sand has been discharged, the float lowers, closing the valve opening and the process is repeated.

The cross section area of classifiers is governed by rising current desired and the volume of sand to be classified. Variations in depth of a series of classifiers are employed to regulate closeness of classification; the deeper the classifier the closer the separation.

It is of interest to note the size range recovered in the various classifiers, shown below:

Size Range

- Class. 1: No. 4 to No. 40-mesh
- Class. 2: No. 8 to No. 48-mesh
- Class. 3: No. 10 to No. 60-mesh
- Class. 4: No. 14 to No. 80-mesh
- Class. 5: No. 28 to No. 100-mesh
- Class. 6: No. 40 to No. 100-mesh
- Class. 7: No. 48 to No. 100-mesh

Note: The maximum size produced by each classifier is determined by the design of the launder above it.

The table below gives the sieve analyses of products collected in each classifier:

Sieve Analysis of Classifiers' Products (Retained Percentages)								
Sieve	1	2	3	4	5	6	7	
No. 4	1.6	.3	.0	.0	.0	.0	.0	.0
No. 8	12.0	4.5	2.0	.3	.0	.0	.0	.0
No. 14	36.0	19.0	11.0	2.7	.6	.3	.0	.0
No. 28	72.0	53.0	36.0	18.3	7.0	3.2	.6	.6
No. 48	95.0	88.0	82.0	72.0	57.0	51.0	16.5	16.5
No. 100	99.5	99.5	99.2	99.1	98.1	97.0	84.0	84.0

causes it to back up into the float chamber above, thus raising the float and lifting the valve to allow the sand to discharge from the bottom of the

Variations in the amount of rising water supplied will to a limited extent affect the percentage of fines collected in an individual classifier. Rising wa-

RECOVERING FINES

ter per classifier runs between 50 to 100 g.p.m. The automatic discharge of sand from the cone is adversely affected if too much variation in rising water is attempted.

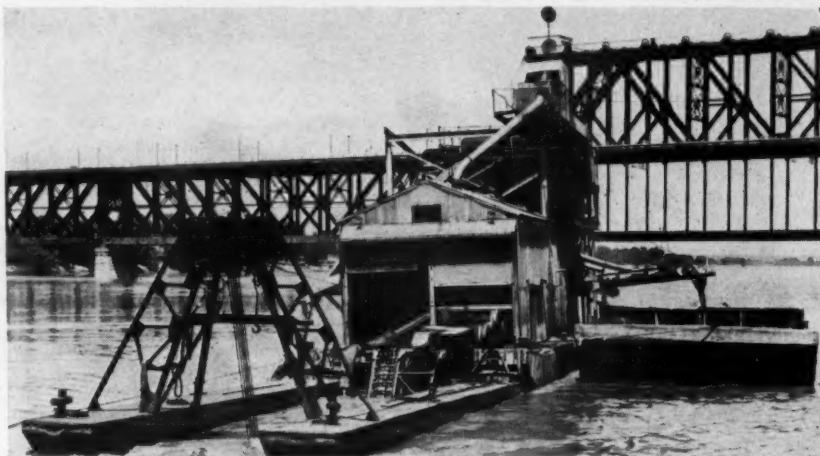
Classifier discharge spouts are arranged to waste the product of any one or more classifiers in the series. The decision as to which if any shall be wasted depends on the gradation of the deposit being dredged, and the gradation of the desired product.

Future plans for the dredge include the installation of additional special equipment for the more complete recovery of fines (—100 mesh).

Waste Excess Sand Sizes

Troughs under the classifiers feed sand from any of the individual cones into the two new 24-in. x 15-ft. double-screw washers. The sand between 30- and 50-mesh, collected in the No. 4 and 5 cones, is wasted back to the river and only the sand sizes necessary to produce a specification sand are sent to the screws. The screws discharge to a 36-in. belt conveyor that loads barges. Overflow from the screws is laundered to the river through a 12- x 12-in. trough.

Another more recent problem with which sand producers have had to contend is the production of a con-



Sand dredge, equipped with 12-in. pump, has two banks of seven sand classifiers

crete sand containing enough minus 100-mesh size to meet Federal specifications. This company handled the problem by dredging a bank of fine sand in the river that contained as much as 20- to 30-percent passing 100-mesh. This sand is stored in a new 100-ton capacity, three-compartment Blaw-Knox bin, and when Federal specification concrete is produced in the company-owned ready mixed concrete plant, the fines are weighed

in a weigh batcher and added to transit mixers as an admix.

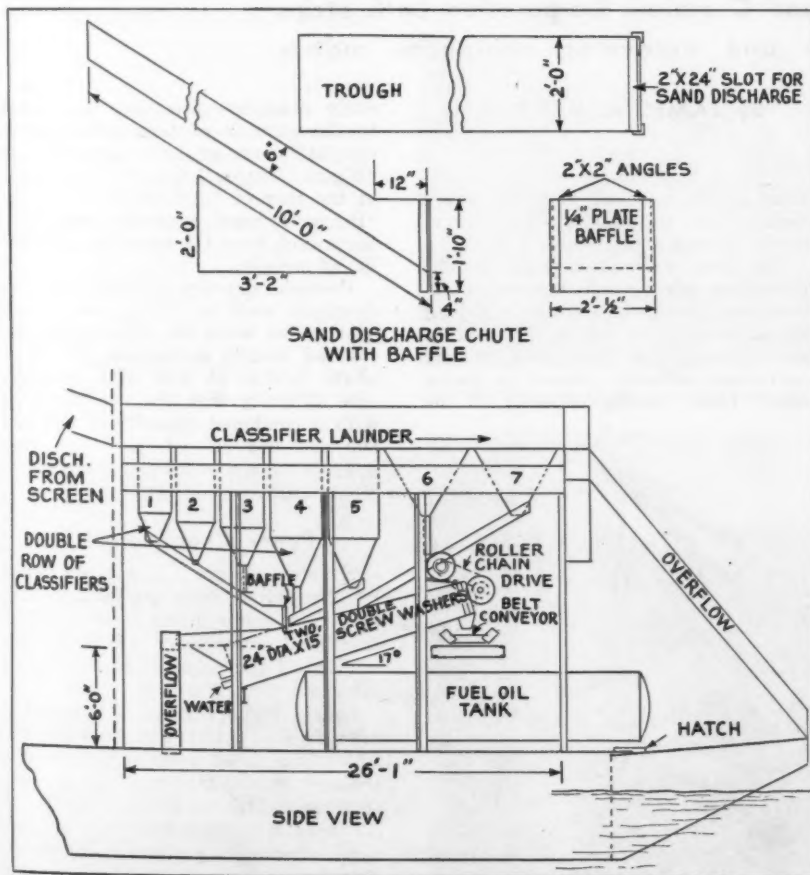
Loaded barges are towed to the unloading dock by the "John Prince," a new tow boat placed in operation in May, 1946. This boat is a converted Navy "LCM6" landing craft, 54-ft. long, 14-ft. wide, with a 36-in. draft. It is powered by two 64HN9 Gray Marine Diesels that drive twin screw propellers, having a 24-in. diameter and a 17-in. pitch, through twin-disc reduction gears with a 1.50 to 1.0 ratio. Normal operating speed of 1500 r.p.m. gives 165-hp. for each Diesel. The boat is equipped with a 1500-watt, 110-volt Kohler lighting plant. Water for cooling the engines is carried in a specially-constructed 6-in. pipe bumper that is placed just under the water line around the hull. This pipe is 50-ft. long and carries fresh water pumped by the sea-water pump on the motors, a 1½-in. gear pump with rubber compaction gears. Speed of the two boats is about 8 m.p.h. light, and 3 m.p.h. towing one barge.

Conversion of an LCM hull to a fine-sand dredge was made by installation of a 6-in. pump and by cutting a 2-ft. wide well in the center of the hull, 20-ft. long, to accommodate the suction pipe.

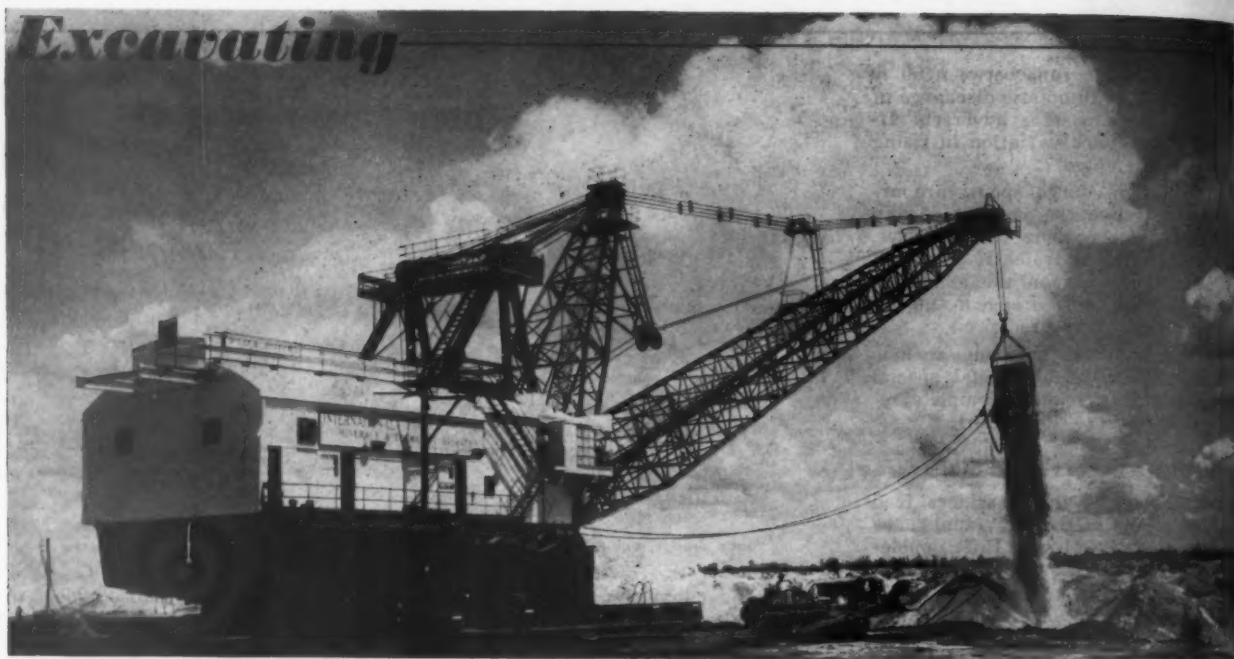
At the dock, barges are unloaded and the sand stockpiled by a Link-Belt electric crane with a 1¼-cu. yd. clam-shell bucket on a 60-ft. boom. From the stockpile, sand is placed into two 500-ton capacity concrete storage silos by a Koehring Diesel crane with a 1¼-cu. yd. bucket and a No. 33B Bucyrus-Erie Diesel crane with a 1¼-cu. yd. bucket. These two cranes also charge truck loading bins. The concrete storage silos serve the ready mixed concrete plant as well as trucks.

Production capacity of the fine sand is about 600 t.p.d. and of the concrete sand, about 360 t.p.h.

(Continued on page 69)



Elevation details of sand dredge showing how classifiers are arranged



Giant walking dragline which excavates 1925 tons per hour in the Florida phosphate field. This machine replaces two older draglines

"BIGGER DIGGER"-An Electronic Hercules

Walking dragline operated by International Minerals and Chemical Corporation both strips overburden and excavates phosphate matrix

By JAMES A. BARR, Jr.

A FAR CRY from the lowly efforts of the earthy mole and earthworm or the laborious early hand labor mining methods, are the 32-ton gulps of the "Bigger Digger"—a giant dragline excavator symbolic of mechanical prowess and well named by those who through intimate daily contact are masters of its versatility.

Powered wholly by electricity; supported on a circular 51-ft. base; walked about the country by two huge 9- x 54-ft. shoes; this most powerful of all modern draglines is

truly an example of just how much mobility can be built into such mammoth mining equipment.

The first excavators used in the phosphate mining industry were cumbersome (though small) steam driven shovel excavators which did well to get through the day shift mining operations without a minor or major delay. Daily mining capacity of the

early machines was only equivalent to the number of tons excavated in one half hour or 34 swing cycles of "Bigger Digger." Gouging out earth at the rate of 3,850,000 lb. per hour, "Bigger Digger" excavates and transports each hour $1\frac{1}{2}$ times its 2,571,000 lb. of weight.

Previous practice required that two draglines work in unison; one to strip overburden while the other mined uncovered matrix containing the phosphate pebble. It was with considerable difficulty that the two machines with a combined capacity of between 800 and 900 cu. yd. per hour even approached the requirements now fulfilled with ease by one machine.

Power Characteristics

"Bigger Digger" is entirely electrically driven from the largest 1250 hp. synchronous motor to its smallest fractional horsepower auxiliary motor. In all there are 46 motors totaling more than 2000 hp.

Local high voltage transmission lines furnish current at 66,000 volts, which is stepped down by transformers and transmitted to portable substations at 11,000 volts. For operating the dragline, current is fed through large diameter armoured cables at 4000 volts. Transformers located on the dragline further reduce the volt-



Old Vulcan steam shovel, one of the first used in both the Florida and Tennessee fields, about 1910

EXCAVATING

age to 440 volts for auxiliary motor operation.

Electrical energy is converted into mechanical movement by two motor-generator sets. The larger of the two is powered by a 1250 hp. synchronous motor which through a single shaft drives four 375 kw. generators responsible for power requirements of both digging and hoisting. Through this motor-generator set, an equivalent of 850 hp. is available for digging with the 21.4 cu. yd. bucket and 850 hp. is available for hoisting the loaded bucket. A smaller motor-generator set is provided for the swing motion. Equipped with a 500 hp. induction motor which drives three 112½ kw. generators, this set supplies an equivalent of 375 hp. for the swing motion.

Numerous auxiliary motors for operating the Rototrol, pumps, fans, compressors and walking motion drives increase the horsepower requirements to a figure seldom dreamed of for excavating equipment before the "Bigger Digger" was put into operation by International Minerals and Chemical Corporation at their Peace Valley property in the Florida phosphate field.

Pertinent Facts

Total weight, pounds	.....2,571,000
Bucket size, cu. yd.	.....21.4
Length of Boom, feet	.....215
Rock weight per bucket, lbs.	..64,200
Buckets per hour	.....60-75
Total rock weight per hour, pounds	.....3,850,000
Total rock weight per 20 hour operating day, pounds	..77,000,000
Size of walker shoes, each	.9- x 54-ft.
Diameter of supporting tub, feet	..51
Length of step	.....7 ft. 6 in.
Largest shaft diameter	.....22 in.
Walking speed, miles per hour	..0.11
Total nameplate horsepower	....2100
Largest single motor, synchronous	.....1250 hp.
Number of motors	.....46
Largest wire rope diameter	..2¼ in.
Reach, feet	.....218
Digging depth, feet	.....130



From an old print, showing the primitive methods first employed for the recovery of phosphate in the Florida field

Controlled byRototrol System
Protected by ...Stress Alarm System

Electronic Controls

Maintenance and repair have previously been major items on all over-size excavators operated by standard equipment. Subject to back lash in the boom structure principally because of inability to control acceleration and smooth deceleration delays were frequent and costly.

Most ingenious of the new controls on "Bigger Digger" is the Rototrol—a rotating control which, activated through a generator voltage intelligence system by fingertip pressure, responds to every wish of the operator for a change in power requirements.

The Rototrol in an electronic system functions very much like the hydraulic drive in a mechanical system. The use of variable voltage drive with Rototrol provides extremely rapid operating cycles, faster acceleration to full speed, faster deceleration from full speed and at the same time, due to reduction of peak and shock loads, limits the mechanical stresses in the wire ropes, sheaves, gears and other parts to safe values. It is by means of this electronic brain that "Bigger Digger" can dig phosphate matrix to a depth of about 130 ft. and then carry the 64,200-lb. load 420 ft. to



Material is pumped from the dragline (older type) to washer. Hydro-separator separates slime from phosphate sand. In the immediate foreground may be seen the pulp flowing from pipe to tank which contains the feed for the flotation plant

the dumping spot within but one minute and without any danger of overloading its intricate metal structure.



This illustration shows the transition from the older steam shovel to a No. 14 Bucyrus dragline, to the left

Those who have ever operated a shovel or dragline will remember how it was necessary to force the hand levers and press on the foot pedal until at the end of a shift the arms and legs of the operator felt as if they would drop off. Gone forever is the day when so much effort is expended for control alone. A tired operator is dangerous not only to himself but also to those who work with him.

Aided by boosters and amplifiers throughout the entire machine, the operator needs only to use the light pressure of his fingers and toes to make the unleashed forces do his bidding. Power amplification in the electronic system is in the order of sev-

(Continued on page 69)

Crushing



Bussen Quarries, Inc., produces riprap with jaw crusher set for 9-in. opening and slow feed and screen with large openings

By H. E. SWANSON

Pan conveyor elevates crusher product to double-deck vibrating screen. Over-size or riprap is stored in 25-ton surge bin from which it is conveyed by another pan conveyor to steel chute for truck loading

Producing Riprap Mechanically

H EAVY DEMANDS for riprap to protect river banks and for flood control prompted the Bussen Quarries, Inc., Jefferson Barracks, Mo., to modify crushing equipment and add screening capacity. Older hand production methods not only involved almost prohibitive labor costs, but also yielded small tonnage. The "one man" riprap, weighing from 25 to 175 lb., is now being produced successfully by mechanical means in amounts as great as 500 t.p.d.

Experiments in various speeds and jaw openings with the primary crusher, a 25- x 40-in. Cedarapids jaw crusher, resulted in a minimum of spalls and a maximum of the desired size for the one-man riprap. Speed

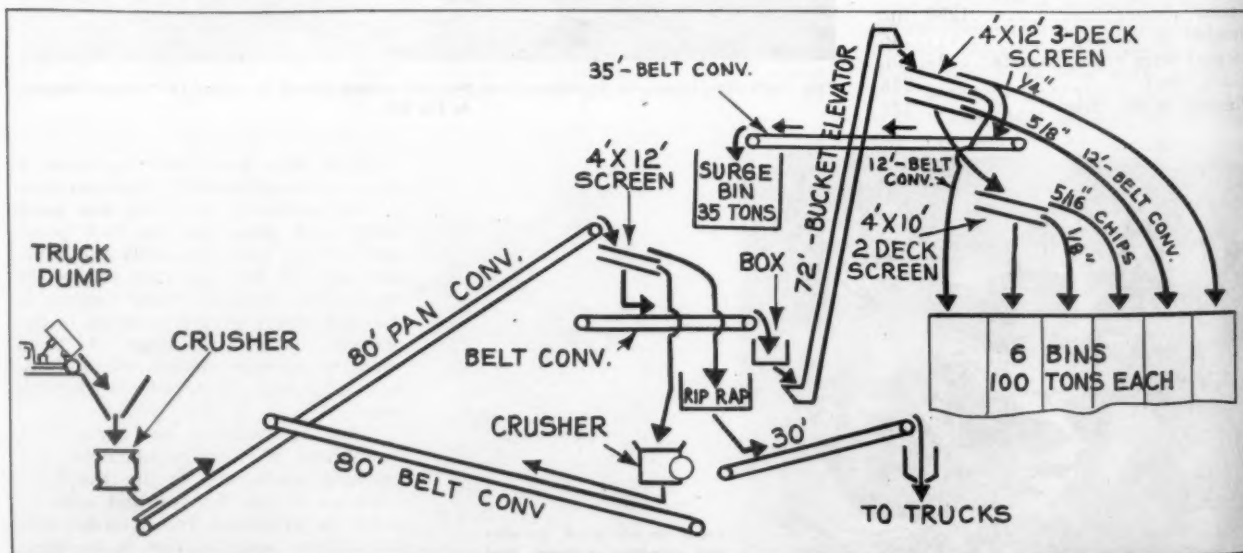
was adjusted to produce the desired size sent to the screens, so that about 50 percent of the feed would be of the size required for riprap. By speeding up the crusher, a greater amount of fines is produced, and vice versa.

The crusher opening is set at 9 in. during the periods when riprap is produced. This period is during the low stages of the Mississippi river, when the stone can be placed in the banks. At other times, production is concentrated in crushed stone and agricultural limestone wholly. During this period, the crusher jaws are set at a 6-in. opening.

Conveyed by a Link-Belt pan conveyor, the crushed product discharges

over a 4- x 12-ft. heavy-duty, double-deck Simplicity screen with 6- and 2-in. square openings on the upper and lower decks, respectively. Oversize, the one-man riprap, is stored in a 25-ton capacity surge bin. It is delivered by a Stephens-Adamson pan conveyor to a steel chute for truck loading. Trucks transport the stone to a ramp for railroad car loading or to a dock for barge loading.

The stone passing the top deck and retained on the 2-in. deck is recrushed in a Williams Jumbo hammermill and returned in closed circuit to the pan conveyor by a Cedarapids belt conveyor. Minus 2-in. stone is delivered to the main plant for processing into commercial sizes.



Flowsheet of screening and crushing operations with an auxiliary plant for the production of riprap

Superimposed above six 100-ton capacity bins are a 4- x 12-ft. triple-deck Simplicity screen and a 4- x 10-ft. double-deck Simplicity screen for sizing the product delivered by a bucket elevator. For further reduction, plus 1½-in. stone can be recrushed in a 30- x 42-in. Williams hammermill and returned to the bucket elevator in closed circuit.

Al. J. Bussen is president of Bussen Quarries, Inc., and Sylvester Bussen is superintendent.

Bigger Digger

(Continued from page 67)

eral hundred thousand to 1. With such mechanical and electrical aids, an operator becomes a more valuable producer and his well-being is reflected in a significant increase in production and decrease in avoidable accidents.

To further protect the mechanical structure and also to relieve the operator of the gnawing fear of overloading any part of the superstructure or electrical equipment, a stress alarm system was installed to warn the operator whenever something is done wrong. The system consists of many electronic brains which are activated whenever a dangerous stress is applied at any of the points vulnerable to overload.

Movement Features

It is difficult to visualize a 2,571,000-lb. dragline walking around on its 9- x 54-ft. shoes. An awe-inspiring sight, one does not readily forget the Paul Bunyan style excavator which can be made to walk straight ahead, at right angles or any angle in 7 ft. 6 in. steps at a speed of 0.11 miles per hour.

The walking dragline has a decided advantage over the previous draglines which were supported by and moved along tracks mounted on bulky mats. It is not uncommon to have the bank crack near the excavator whenever the overburden layer is saturated with water or slick seams occur between the overburden and clay matrix. A track mounted dragline has little chance of getting away from the danger zone since it moves always parallel to the bank. "Bigger Digger," however, can just turn at 90 deg. and walk away from the danger.

Advances In Mining Practice

Advance in mining practice has been significant. Only a few years ago hydraulic mining was used throughout the entire phosphate pebble field for both the stripping of overburden and mining of the underlying matrix. Powerful monitors spouting streams of water under pressure of 200 to 250 p.s.i. sluiced overburden and matrix into their respective pump wells. Large pumps sucked up the material at about 15 to 20 percent solids and forced the slurry through large diam-



Jaw crusher which has been set for the production of riprap

eter steel pipelines to the debris areas or to the phosphate washer.

"Bigger Digger" has made it possible to strip overburden and to mine matrix with one machine. A small mountain of mined matrix is dumped at the edge of a shallow pit dug out of the surface soil. The pit is located away from the dragline and at a sufficient distance to assure efficient dumping of the bucket on the swing cycle. Thus all mining operations are carried on from surface level, an important consideration when the water table is so near the surface. Water and pumping requirements are kept at a minimum since only one monitor operating at the low pressure of 50-75 p.s.i. is required for sluicing the matrix.

There is little wonder why monthly excavating records are made only to be broken with the "Bigger Digger"—an electronic Hercules controlled and protected by electronic brains. It is a tribute to those who foresaw its potentialities and to those who through the many phases of cooperative research between manufacturer and operator transposed a dream into reality.

Sand Classification

(Continued from page 65)

About six years ago under the personal supervision of Mr. Prince, a laboratory was fitted up to study sand classification. A glass experimental classifier was constructed in order to observe visually the action of hindered settling. Equipment was also provided for measuring water flow, sand feed and specific gravity in the hindered settling column. Samples of the sand under examination were taken from the column through a sampling tube connected to a water aspirator. These samples were checked for size by screening and also measuring the free settling rate in water. Curves were made up from the data

collected, giving the hindered settling rate for all sizes of grains from No. 4 to No. 100-mesh, and for sand densities from 0 to 80 lb. per cubic foot. This data formed the basis for the design of the classifiers now in use.

Hydrated Silica

GABRIEL ASSOCIATES, a consulting engineering firm, formerly of Washington, D. C., has developed an industrial process by which volcanic rock can be converted into a plastic-like substance which is known as X-Rox. It is said to be similar to hydrated silica, and it can be mixed with cement, resins, and other bonding materials. W. H. Gabriel, who said that a corporation was being formed to exploit the process, explained that articles formerly made of porcelain, china, clay and plaster could be made from the new material. The X-Rox process of exploding the volcanic rock under heat and pressure follows the puffed-rice principle. X-Rox, Inc., has been capitalized for \$1,000,000 at Carson City, Nev., and plants are planned for Los Angeles and Philadelphia. Officers are J. R. Colgan, Reno, Nev., president; Herb Maxwell, Auburn, Calif., vice-president; and John D. Flournoy, Reno, secretary-treasurer.

Buys Quarry

ROBERT M. MURPHY, Appleton, Wis., has purchased the George Kline quarry near Kaukauna. Mr. Murphy has other quarries at Black Creek and New London, Wis.

Increase Agstone Tonnage

EULER LIME Co., Mansfield, Mo., recently added a stone feeder to its crusher, nearly doubling its former capacity of 200 tons of agricultural limestone per day.

OPERATING T



Sand and gravel plant of Hedberg-Friedheim, Minneapolis, uses the Kern storage and reclaiming system

Minnesota's Wide Range of Minerals

Glacial deposits and outcrops of both sedimentary and igneous rocks are easily reclaimed

By H. E. SWANSON
and NATHAN C. ROCKWOOD

of sand and gravel, and gently undulating intermorainic till plains.

Rock Formations

The rock formations that outcrop are listed in the accompanying table. The names of the formations are arranged in order of age, with the oldest at the bottom. (See page 75)

The ancient Archeozoic rocks are predominantly volcanic in origin. The Keewatin or Ely greenstones represent basic or basaltic lava flows that have been intensely altered by metamorphism. These rocks form a continuous belt across north central St. Louis County and westward into Itasca County. They crop out northwest of Hibbing and northeast of Mountain Iron, and they form conspicuous ridges with little if any glacial drift cover, in the region northeast of Eveleth.

The Soudan iron formation is an iron-bearing chert that was deposited on and between the greenstone lavas as a laminated sediment. Geographically it is limited to the areas of Kee-

watin greenstone where it occurs as parallel belts a half mile wide and several miles long or as narrow stringers or patches surrounded by greenstone.

The Laurentian series of granites, felsites and porphyries are exposed extensively in the region of Saganaga Lake. This area is still quite inaccessible and consequently the rocks are not being used commercially.

Proterozoic

The oldest Proterozoic rocks are slates and conglomerates of the so-called Knife Lake series. These rocks are found exposed and under the glacial drift over an area of many counties in the north-central part of the state. The series includes many kinds of rocks. Those found most abundantly are argillaceous slates, cherty slates, tuffaceous slates and graywackes. Structurally the slates are folded in a very complex fashion.

The deposition of the Knife Lake series was followed by the intrusion of the Algoman granite batholiths. These granites are exposed extensively in the Giants Range that parallels the north margin of the Mesabi Iron Range and across the entire width of the northern part of St. Louis County. Most of the granites of central Minne-

MINNESOTA presents more variety in surface features than most of the North Central States, yet a great part of its surface is level or only gently undulating. The flattest portion of the state falls largely in the northwest quarter and was once the bed of glacial Lake Agassiz, of the last great ice sheet that moved over the area from the region west of Hudson Bay. The roughest portion of the state is in the northeastern quarter. This region with conspicuous ridges of rock which rise from 500 to 900 ft. above the level of Lake Superior, is composed largely of volcanic formations and iron-bearing rocks which, though glaciated, were not everywhere buried beneath the glacial deposits.

The southeastern part of the state is a deeply dissected plateau. Here the tributaries of the Mississippi River have eroded valleys from 300 to 600 ft. deep, which are flanked by bold rock bluffs, the crest of which are massive limestones. The interior and southern parts of the state have topographic features due almost entirely to the work of the great ice sheets. The glacial deposits comprise an intricate system of moraines with undulating to hilly surfaces, associated with which are level outwash plains

TRENDS



sota in the region of St. Cloud and those exposed in the valley of the Minnesota River are thought to be of Algonian age. The rocks include granites of many different textures and colors.

The rocks of Huronian age are represented by the Pokegama quartzite, the Biwabik iron-bearing formation and the Virginia slate. The quartzite includes siliceous rocks of various textures, some being conglomeratic and others micaceous. The formation ranges from a few feet to over 200 ft. in thickness.

Above the quartzite is the Biwabik iron-bearing formation from 400 to 750 ft. thick, which is composed of a rock commonly referred to as taconite. The various kinds of taconite are distinguished by qualifying terms such as slaty, cherty, banded and conglomeratic. Any type of taconite may be altered into iron ore where silica is removed by a natural process of leaching. Many millions of tons of iron ore have been concentrated on the Mesabi Range by this process.

Directly overlying the Virginia slates is a great series of rocks, largely igneous, which are known as Keweenaw from the extensive exposures on Keweenaw Point, Mich. In Minnesota similar rocks are exposed at Taylors Falls, on the Snake River east of Pine City and along the north shore of Lake Superior from Duluth to Grand Portage Bay. The rocks consist mainly of basalt flows, gabbro, and syenite, with lesser amounts of sandstone, shale and conglomerate.

After many trap-rock lava flows had been poured out in the region of Duluth, the lava had difficulty in reaching the surface of the earth and a large amount of molten material forced open and filled a huge chamber below the surface. This cooled to form

a coarse-grained basic rock, the Duluth gabbro.

The red clastic sediments of Keweenaw age are very thick. They crop out extensively along the St. Louis River at Fond du Lac and at various points in the valleys of east-central Minnesota. They were formerly quarried and marketed as brownstone which was a very popular architectural stone. The Hinckley sandstone is the youngest Keweenaw sedimentary rock. It is well indurated and cemented, and finds a number of industrial outlets.

Paleozoic

Rocks of Cambrian age are well exposed along the St. Croix and Mississippi rivers from Taylors Falls southward to Iowa. The Jordan sandstone, the uppermost formation of the Cambrian series of sediments, ranges from 75 to 200 ft. thick. It is one of the purest quartz sands in the state and is the chief water-bearing bed in the southeastern counties of the state.

The St. Lawrence formation lies directly below the Jordan sandstone. It is composed of sandy, dolomitic limestone and siltstone that represents a transition from the deposition of limestone to that of the pure quartz sand of the Jordan formation. This mixture of quartz, silt, clay, and limestone has been found suitable for the manufacture of rock wool.

The Franconia and Dresbach formations lie below the St. Lawrence. The former is locally rich in glauconite (green sands) and the Dresbach sandstones are quarried for cutting sands and for foundry uses. Both formations crop out along the Mississippi Valley in Wabasha, Goodhue and Houston Counties.

The oldest rock of Ordovician age is the Oneota dolomite. This forma-

tion is the thick-bedded, drab to buff, sandy dolomite which caps the bluffs along the Mississippi River and its major tributaries in the southeastern counties of the state. It is quarried extensively for rock aggregate, agricultural limestone, and architectural stone. Because of its accessibility along stream valleys, it is quarried and crushed for road metal in many localities. The Shakopee dolomite is very similar to the Oneota. Locally it is cherty and bititic.

The St. Peter sandstone which lies above the Shakopee dolomite is one of the most widely recognized formations of the central part of the United States. In Minnesota it underlies the greater part of the area between the Minnesota and Mississippi rivers. It varies from 75 to 175 ft. in thickness and consists of a medium to fine grained, friable, white to yellow sandstone. Texturally and mineralogically it is remarkably uniform, indicating that its sands were well sorted prior to and during deposition. Most of the quartz grains are from one-eighth to one-half of a millimeter in diameter. It will all pass through a screen with 1 mm. openings. The sandstone is poorly cemented and consequently has a high porosity. However, because of the small size of its quartz grains the formation is not highly permeable. Its sands have many industrial uses.

The upper part of the Ordovician system of rocks is represented by limestones and shales. The Platteville limestone is quarried extensively in the area of the Twin Cities and crushed for rock aggregate. The tailings are distributed as agricultural limestone. The Galena formation contains two distinct members. The lower or Prosser member is for the most part a high calcium limestone with

little shaly impurity. It is a hard compact drab limestone from 75 to 185 ft. thick. It crops out at many places in Fillmore, Olmsted and Dodge Counties. Its west margin is heavily drift covered.

The Prosser is overlain by the Stewartville member of the Galena formation. This rock is a somewhat cavernous, gray to yellow or tan, thick-bedded limestone with an average thickness of about 50 ft. It is quarried extensively in the area south and west of Rochester.

The youngest limestones of eco-

nomic value in Minnesota are of Devonian age. They are members of the Cedar Valley limestone which is exposed at the surface in Freeborn and Mower Counties and southward into Iowa. The formation which is 150 ft. thick is exceedingly variable lithologically. The middle portion is a fine-textured, compact, gray to white limestone with a high calcium content. Some of the units contain 98% calcium carbonate. It is quarried and crushed for mineral foods, for quicklime and for agricultural lime.

Mesozoic

Most of the western two-thirds of Minnesota was once covered by the Cretaceous seas. As these withdrew they left a series of gravels, sandstones and shales that occur directly beneath the glacial drift over large areas in the southwestern counties. The gravels are utilized for structural purposes and the shales furnish the raw materials for the ceramic industries in the regions of Springfield and Red Wing.



Showing crushed stone operations in Minnesota. Railroads indicated in color

Commercial Rock Deposits

THE GRANITES that are utilized commercially are found in three widely separated regions in Minnesota: (1) Central Minnesota, particularly in the region of St. Cloud. (2) The upper Minnesota Valley from New Ulm to Ortonville. (3) The Arrowhead region, which includes the area north of Duluth in St. Louis, Cook and Lake Counties.

The stone in the St. Cloud region

may be grouped into three major types, namely pink granite, red granite, and gray granite. The difference in color is due mainly to the character of the feldspar minerals in the rock. They may be colorless, pink, deep red, or gray. Much of the dimension stone quarry and plant wastage is crushed and marketed as rock aggregate. The gray granites south of Mille Lac Lake in the region of Isle and

Warman Creek are light gray due to the presence of nearly colorless feldspar with black hornblende.

Gabbro and diabase are very abundant in northeastern Minnesota. The Duluth gabbro, one of the largest masses of this type of rock in the world extends from Duluth north and east in a great arc over 100 miles long and varying up to 40 miles in width. This rock has been utilized in Duluth mainly for crushing for concrete and highway construction. There are large outcrops of gabbro and dia-



Map of Minnesota showing location of sand and gravel plants. Highways shown in color

OPERATING TRENDS

base along the Minnesota shore of Lake Superior which may be utilized at some future date.

The accompanying physical tests are characteristic of the granites of Central Minnesota.

Physical Tests:	St. Cloud Gray Granite	St. Cloud Red Granite
Crushing strength		
First crack	15,080 p.s.i.	9,733 p.s.i.
Final collapse	21,000 p.s.i.	19,101 p.s.i.
Modulus of rupture	2,979 p.s.i.	2,291 p.s.i.
True specific gravity	2.76	2.64
Pore space	0.37 percent	0.32 percent
Weight	171.1 lbs./cu. ft.	164.6 lbs./cu. ft.

In Pipestone and Rock Counties in southwestern Minnesota a hard siliceous quartzite known as the Sioux quartzite crops out in a number of localities. The rock is very strong and tough and consequently is quarried for a variety of purposes. It is used extensively for building blocks, roofing chips, ball-mill "pebbles," ball-mill lining blocks and crushed stone.

The Scarlet Stone Quarry just north of the town of Pipestone is about 400 ft. in diameter and from 15 to 40 ft. deep. The blocks are quarried with sledge hammers and crow bars, since there are numerous intersecting joints. Little blasting is necessary. The rock is crushed and screened to a size desirable for roofing granules. The over sized material is returned to the crushing circuit and the under sized finds use as a siliceous sand. Some of this finds an outlet in the abrasive industry.

Much of the rock of the Jasper Stone Co. is cut into the sizes and shapes required for ball mill lining. Some blocks are 3 by 4½ by 1½ in.,

others 10 by 1½ by 1 in. Some burr stones are also quarried and cut to a dimension of 6 ft. in diameter and 18 in. thick.

In the region of New Ulm much of the Sioux quartzite has been quarried

and crushed for rock aggregate.

Most of the Paleozoic sandstones are not sufficiently cemented to be used for architectural or structural purposes or as a source of crushed rock aggregate. However, the Pre-Cambrian sandstones which outcrop in the region southwest of Duluth have supplied a variety of rock products for many years. Two different types of sandstone are available. The oldest, known as the Fond du Lac beds, are exposed along the valley of the St. Louis river southwest of Duluth. These beds contain ledges from 8 in. to 3 ft. thick of brown, red, and pink ferruginous sandstone. This rock was quarried extensively and used as building stone under the trade name of Brownstone. Many massive homes and office buildings were constructed from this stone during the first decades of this century.

The other sandstone that is well indurated is the Hinckley sandstone which is exposed extensively along the Kettle river at and near the city of Sandstone and at other points in Carlton and Pine Counties. This rock is

somewhat ferruginous, and the quarries contain ledges that supply either pale pink, pale yellow, tan or cream colored sandstones that are used extensively for building stone, both for exterior and interior surfaces. Much of the quarry waste is crushed as rock aggregate and the fines are used in foundry practice.

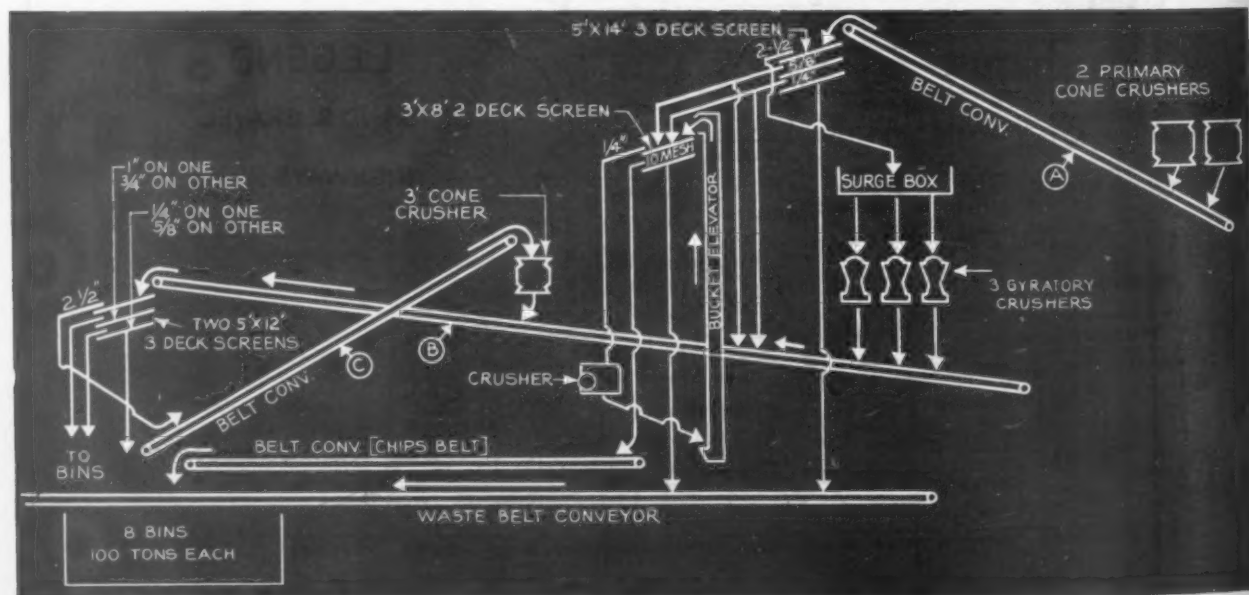
Limestones and Dolomites

The limestones and dolomites interbedded with the Paleozoic formations of the southeastern counties have been widely utilized from quarries scattered over the entire area. The rocks crop out most extensively along the Minnesota river from Mankato to Kasota and along the Mississippi river and its major tributaries from Hastings southward to the southern boundary of the state.

In Winona County the Oneota dolomite has been quarried extensively. Much of the stone is porous and has been widely used as an American travertine. It is well suited architecturally for both exterior use and for decorative purposes. The waste from the quarries is crushed for rock aggregate and the fines are marketed for agricultural limestone.

The quarries of the Mankato-Kasota district are also in the Oneota dolomite. All of the quarries of this district operate in the same geologic formation but some variation in texture and color gives rise to various trade types. In this region the overburden is mainly a thin mantle of river alluvium.

EDITOR'S NOTE—The sections dealing with the geology of Minnesota were prepared under the direction of Geo. A. Thiel, chairman, Dept. of Geology and Mineralogy, University of Minnesota.



Flow sheet of the new screening and crushing arrangement at the Zenith Dredge Co., quarry division, Duluth, Minn. Vibrating screens have replaced trommel screens, and the bucket elevator, the screen which follows, the crusher that discharges to the elevator and a belt conveyor are entirely new installations.

Sands and Gravels

MOST OF THE SANDS and gravels of Minnesota are derived from glacial deposits. These may be divided into five major groups depending upon their manner of deposition: (1) terminal moraines, (2) outwash plains, (3) ground moraines, (4) glacial lake beds, and (5) glacial river terraces. The accompanying map shows the distribution of pits from which the State Highway Department has used material. These pits when plotted on a surface formation map of Minnesota show their occurrence in relation to the kinds of glacial deposits to be as follows: 30 percent are in areas designated as ground moraine, 26 percent in terminal moraine, 21 percent in outwash plain, 16 percent in glacial lake beds, and 7 percent glacial and recent river deposits.

The principal reserves of sand and gravel formed since glacial time are the alluvial deposits along the Mississippi and Minnesota rivers and their tributaries. Most of this material, however, is of glacial origin and has been reworked by post-glacial streams. Large washing and screening plants at Winona and Mankato use material of this kind. The principal glacial channel that supplies sand and gravel is the glacial River Warren which drained Lake Agassiz and flowed in the present Minnesota River valley as far as Fort Snelling and from there into the present Mississippi valley.

Two large glacial lakes existed during glacial time, Lake Agassiz and Lake Duluth. When ice blocked the easterly drainage of Lake Superior much of the water from the melting ice was impounded. The lake was then more than 500 ft. higher than at present and extended over a large area. This old lake, referred to as Lake Duluth, has sand and gravel deposits along its former shore lines. In a similar manner Lake Agassiz was formed, when the ice edge retreated within the Red River valley. Near the shore of this ancient lake waves reworked the glacial drift and built gravely beach ridges. A series of these beaches exists indicating the extent of the lake during various stages of its recession. The beaches are 5 to 20 ft. high and are important sources of sand and gravel in the Red River valley.

Industrial Sands

The chief bed rock sources of sand are the Jordan sandstone of Cambrian age, the St. Peter sandstone of Ordovician age, and the Hinckley sandstone of Keweenawan age. All are virtually flat-lying sedimentary formations of marine origin. The Jordan sandstone ranges in thickness from about 90 to nearly 200 ft. and is exposed in many places in the

List of Rock Formations in Minnesota

Era	System or Series	Formation	Approximate Thickness (in feet)	Character of Strata
Cenozoic	Recent		0-200	Alluvial and lacustrine gravels, sands, and clays
	Pleistocene	Glacial Drift	150±	Unsorted sands, silts, and clays
Mesozoic	Cretaceous	Coleraine (Benton)	50±	Gray to ferruginous shales
		Dakota	125	White to brown sandstone
	Devonian	Cedar Valley	100	Limestone and dolomite
	Ordovician	Maquoketa		
Paleozoic		Wykoff	50	Buff and shaly dolomite
		Lime City	35	Shales and limestones
		Galena		
		Stewartville	60	Buff, mottled dolomite
		Prosser	90	White to gray limestone
		Decorah	60	Greenish gray shale
		Platteville	35	Gray to buff dolomite
		St. Peter	125	White uniform sandstone
		Shakopee	100	Buff to gray dolomite
		Root Valley	30	White to brown sandstone
		Oneota	200	Buff to pink dolomite
		Blue Earth	2	Pale green to white siltstone
		Kasota	6	White, calcareous sandstone
	Cambrian	Jordan	110	White to buff sandstone
		St. Lawrence	60	Buff, sandy dolomite
		Franconia	150	Green silts and sandstones
Proterozoic		Dresbach	300	Sandstones and shales
	Keweenawan	Hinckley	200	Buff to pink sandstone
		Fond du Lac beds	2000	Red sandstone and shales
		Extrusives and intrusives	?	Basalt flows, diabase, gabbro and granite
		Puckwunge beds	100	Conglomerates and sandstones
	Huronian	Virginia (and Rove)	3000±	Slates and carbonate cherts
		Biwabik (and Gunflint)	750	Taconite, ferruginous chert, iron ore
		Pohegama (and Sioux quartzite)	200	Quartzites, slates, and conglomerates
		Algoman Intrusives	?	Pink and gray granites and porphyries
		Knife Lake-Temiskaming	5000±	Slates, graywackes and conglomerates

(See next page for Archeozoic Era)

OPERATING TRENDS

southeastern counties of the state. The upper part of the Jordan sandstone contains reconstructed quartz crystals that are angular and sharp. This material has been used for sand blasting, stone sawing and other abrasive purposes. It has been used also for foundry sand and filter beds in municipal water plants and it has produced some glass sand.

The St. Peter sandstone is commonly a white incoherent sandstone with medium to fine well rounded frosted grains of quartz. It is well exposed along the Mississippi River in the area of the Twin Cities. This material is used for rough finishing of stone and for coarse sand in foundry work. At the Ford Motor Co. plant in St. Paul it is used in making plate glass.

At Sandstone, Minn., the Hinckley sandstone is quarried and crushed. The screenings which are a high silica byproduct of the crushing operation are sold for refractory material to foundries in Minneapolis and St. Paul and for use in the steel furnaces of Duluth.

Minnesota possesses an abundance of foundry sands. There are 43 foundries in Minneapolis and St. Paul, and perhaps as many more scattered through the state. They use many types of molding material.

Foundry sands are produced at the places mentioned in the foregoing paragraphs. Many foundry operators use material obtained locally, mined either by themselves or by contractors. Much of it, however, is excavated in or near Minneapolis, St. Paul, Duluth, Ottawa, and Jordan. Some is imported. Estimates of the quantity of foundry sands mined and sold in Minnesota vary, but the production in 1936 was approximately as follows:

Production of Foundry Sands in Minnesota, 1936			
	Short tons	Value	(approximate)
Steel sand	1,000	\$ 2,000	
Cast-iron sand..	20,000	45,000	
Brass and aluminum sand..	300	1,500	
Core sand.....	25,000	50,000	

Number of Minnesota Sand and Gravel Plants and Average Production of Plants, 1910-40*

Small Plants		Medium Plants		Large Plants		Minnesota Total	
Num-ber	Average Production (tons)	Num-ber	Average Production (tons)	Num-ber	Average Production (tons)	Num-ber	Average Production (tons)
1910	27	3,588	9	42,760	..	36	13,381
1920	25	8,594	10	58,595	4	39	40,642
1930	59	6,930	13	62,469	9	81	42,679
1940	39	8,823	18	48,481	9	66	39,504

*Data from Colby, S. F., Development of the sand and gravel industry; U. S. Bureau of Mines, Information Circular 7203, 1942.

(Continued from page 71)

Archeozoic	Laurentian	Saganaga granites, etc.	?	Granites, gneisses, and porphyries
	Keewatin	Soudan iron formation	?	Chert, jasper, and iron ore
		Ely greenstone	?	Green schists, greenstones, and basalts

Table showing the amount and value of the sand and gravel produced in Minnesota in 1944*

SAND		
Use	Short tons	Value
Molding sand ...	18,502	\$ 21,107
Building purposes		
Commercial ..	684,369	304,114
Gov't contracts	2,786	1,017
Paving		
Commercial ..	223,740	97,720
Gov't contracts	42,217	14,101
Grinding and		
Polishing ..	1,602	1,509
Furnace	103	103
Engine	31,081	7,254
Filter	664	2,158
Railroad ballast.	171,949	37,928
Other uses	26,399	5,358

GRAVEL		
Building		
Commercial ..	442,453	401,477
Gov't contracts	41,578	21,155
Paving		
Commercial ..	426,423	201,534
Gov't contracts	5,287,990	363,129
Railroad ballast.	2,128,350	584,914
Other uses	173,945	42,226

*U. S. Geological Survey, Mineral Yearbook, 1945.

Clays of marine origin occur in two geological formations: the Decorah Shale of Ordovician age, and the Benton Shale of Cretaceous age. The Decorah Shale extends from the Twin Cities south and southeast, and the Benton Shales are found at widely scattered points from Brown County to Goodhue County. It is being used on a large scale at Springfield.

The residual clays have resulted from the weathering of Pre-Cambrian granites. They occur beneath the glacial drift over large areas in southwestern and west-central Minnesota.

They crop out along the Minnesota Valley in Ramsey State Park north of Redwood Falls and near Richmond in Stearns County. Well records indicate that in many places these white kaolinitic clays attain a thickness of 50 to 100 ft.

Glacial lake clays occur in the area southwest of Duluth in what was the bed of glacial Lake Duluth. There are large deposits of red plastic clays that were reassorted by stream and wave action.

River valley clays occur along the wide valleys of the Mississippi and Minnesota rivers and their major tributaries. These are banded gray glacial clays laid down thousands of years ago when these streams carried sediment laden water from the melting ice sheet. Clays of this origin have been used in Chaska and Jordan and along the Mississippi River from Minneapolis to Brainerd.

Wind deposited material known as loess and composed of fine silt and clay mantle most of the surface in an area in the southeastern part of the state, embracing much of Goodhue, Olmstead, Wabasha, Winona, Fillmore, and Houston Counties. On the upland plateaus of these counties it attains a thickness of 25 ft.

Marl

Marl is an unconsolidated earthy material composed essentially of calcium carbonate. It is gray, white, or buff in color, but if it is contaminated with peaty material it may be dark gray or brown.

There are hundreds of deposits of marl in and around the lakes and drained lake basins in Minnesota. It has been estimated that in Crow Wing County alone there are at least 30 million cubic yards of marl. Stearns County also has several large deposits, and isolated large deposits occur in Aitkin and Wright counties and elsewhere.

To date most of the marl that has been excavated has been used for agricultural purposes as a soil sweetener for acid soils. A large cement plant near Monticello will soon be constructed which will utilize as its major raw material for cement the marl deposits in eastern Wright and Stearns counties.

The only portland cement plant in Minnesota at the present time is lo-

PLANT PRACTICES

MINNESOTA—the land of 10,000 lakes—and entirely glaciated, has an abundance of sand and gravel excellently suited for construction aggregates. With industry concentrated for the most part in the southern half of the State, portable plants have come into their own in the sparsely settled sections. The availability of good gravels, together with the economy achieved by moving a portable plant adjacent to the job site, has meant that permanent plants are found in the populated areas almost exclusively.

Sand and gravel producers in Minnesota are fortunate in that gravels are sound and durable, and the only trouble is experienced with a little clay and shale in some of the deposits. The common method of removing the impurities is by picking the clay balls from belts while shale is removed to a satisfactory degree in screw or bucket deshalers. Sand containing enough fines to meet State Highway Specifications is abundant throughout Minnesota, and some plants can even meet the rigid Federal Specifications.

Hallett Construction Co. has a number of portable plants in addition to its permanent plants throughout the state. At St. Peter, a permanent plant is producing aggregates for local consumption as well as for State highway construction. Newly erected portable plants have been in operation at Hastings and at Elk River. The Hastings plant was moved to that location to provide aggregates for widening the locks at the Hastings dam and locks.

Winona Sand and Gravel Co., Winona, rehandles material from the pit, thereby giving it an extra washing before delivery to the plant. Working a deposit 50-ft. thick that averages 50 percent gravel, material is pumped about 1200-ft. by an 8-in. Amsco pump to a sump where it is picked up by a 2-cu. yd. Lidgerwood dragline for stockpiling above a reclaiming tunnel. It is conveyed to the plant, about 1000 ft., by a system of three

30-in. belt conveyors through two transfer stations.

Discharge from the final conveyor is to a small hopper that concentrates the feed to a spreader table. The table distributes the flow to a 3- x 14-ft. triple-deck Symons horizontal screen where gravel is sized and sand is laundered to tilting-discharge sand classifiers. Sized products are stored in four 100-ton capacity concrete silos with discharge chutes on two sides for truck and car loading. Production capacity is about 2000 tons per 8-hr. day.

The deposit contains sound durable gravel and the rehandling and washing removes clay and dirt carried to the stockpile from the slight overburden. Prior to the installation of the tilting-discharge classifiers, this company used settling tanks, reclaiming sand with about 10 percent passing the 50-mesh and none through the 100-mesh. The new classifiers have been capable of recovering as much as 18 percent through the 50-mesh and between 1 and 2 percent through 100-mesh.

Use Slackline Cableway Systems

A similar operation is the Stehn Sand and Gravel Co., also located at Winona. A Sauerman slackline cableway scraper with a 1½-cu. yd. bucket reclaims sand and gravel from a sump fed by an 8-in. Morris pump from the 36-ft. thick deposit. This deposit runs heavy in sand, averaging about 70 percent of the total. Gravel is sized on a 30-in. x 12-ft. triple-deck Pioneer screen, and sand is collected in settling tanks.

At West Mankato, the Guaranteed Gravel and Sand Co. recovers sand and gravel from the Blue Earth river, using a Sauerman drag line with a 1½-cu. yd. bucket. The product is stockpiled, loaded to trucks by crane, and transferred to the plant where an inclined belt conveyor delivers it to four revolving screens for gravel sizing. Plus 1½-in. gravel is crushed

in a jaw crusher and returned to the screens by bucket elevator. Sand is collected in Link-Belt classifiers. About 70 percent of the 500 t.p.d. production is sand.

North Star Concrete Co., Mankato, uses a Sauerman slackline cableway scraper with a 1½-cu. yd. bucket to reclaim sand and gravel from the Minnesota river. From stockpiles on the bank the sand and gravel is loaded to trucks by a Northwest crane with a ¾-cu. yd. clamshell bucket. Trucks deliver the material to the plant and discharge to a hopper through a steel rail grizzly. From the hopper it is elevated to a single-deck scalping screen by belt conveyors where the oversize, plus 1½-in., is sent to a jaw crusher for reduction. Minus 1½-in. material is transferred by belt conveyor and bucket elevator to a 4- x 8-ft. double-deck Tyler Niagara screen for sizing. Additional sizing is made on a 3- x 8-ft. double-deck screen. Sand is washed and dewatered in a Stephens-Adamson screw washer prior to delivery to bins. Production capacity is about 600-cu. yds. per 10-hr. day.

One of the permanent plants of Hallett Construction Co. is located at St. Peter, where the two new portable plants were fabricated in the company shops. The deposit at this location consists of a 15-ft. stratum of sand and gravel in equal amounts, covered by 2- to 4-ft. of overburden. Excavation is handled by a Model 5 Northwest crane and TD14 Caterpillar dozer augmented by a Lima Paymaster shovel. Trucks, loaded at the pit, deliver to a hopper at the plant. Conveyed to a 4- x 8-ft. double-deck Simplicity screen, the oversize is scalped off for reduction. Plus 2½-in. gravel retained on the top deck is crushed in a 15- x 36-in. Diamond jaw crusher and the product retained on the lower deck (1- to 2½-in.) is crushed in a 3-ft. Symons cone. The crushed gravel returns to the belt conveyor in closed circuit for return to the screen. Minus 1-in. material is elevated by belt conveyor to the top of the plant and discharged into a revolving screen equipped with a



Left: Primary crushing and scalping plant of Hallett Construction Co., near Big Lake, where oversize is crushed in two crushers, shown in the center. Right: Final screening and desanding station. Conveyors deliver sized aggregates to bins.

scrubber section. Sand separated by this screen is laundered to two No. 7 Tel-smith classifiers.

Gravel is rewashed and sized on a 4- x 10-ft. triple-deck Diamond screen and chuted to stockpiles. Plant capacity is about 240 t.p.h.

Another of the Hallett Construction Co. portable plants was operated during the summer of 1946 near Big Lake to produce aggregates for the construction of the State highway between Big Lake and Elk River. The deposit chosen, and accepted by the State Highway Department after tests, was a huge mound, geologically known as an esker, that contained about twice as much gravel as sand. This was an ideal proportion although not unusual in Minnesota, where the glacial deposits are well suited to the recovery of good sound material for concrete construction. Aggregates were produced for an equivalent of 14 miles of single-lane highway and estimates showed that about 50,000 cu. yds. of gravel and 20,000 cu. yds. of sand were produced.

Portable Supplements Permanent

Installation of a Model 1235 Pioneer Duplex portable screening and crushing plant was made in the Spring of 1946 by the Duluth Builders Supply Co., Duluth, to produce a specification gravel with a top size of 1-in. for use in ready mixed concrete plants. With the normal screening arrangement in the permanent plant, aggregates have been produced since 1928, concentrating on the production of concrete aggregates for road construction, which specification calls for a top size of 1½-in. for the coarse aggregate.

Since changing the screening arrangement to produce the 1-in. gravel would mean that the screens would only have to be changed again when the 1½-in. product came into heavy demand, and since the specifications for concrete aggregate could not be met if the 1-in. size were robbed from the concrete aggregate, the portable



At the Glacier Sand & Gravel Co., deposit near Minneapolis, the deposit is worked by slackline cableway scraper bucket which dumps to a belt conveyor system to the plant

plant was installed to recrush the 1½-in. gravel from stockpiles.

Present screening arrangements at the permanent plant permit the production of four sizes of gravel and two of sand. The gravel sizes are 1½-, 1-, ¾-, and ½-in. top sizes, with the majority of production concentrated in the larger specification gravel. Although the 1-in. gravel is made at this plant, enough could not be produced to meet the huge demand during the past months. The new portable plant adequately handles this demand.

When the bins in the permanent plant are full, a chute arrangement delivers the overflow to a stockpile adjacent to the plant, from which it is relayed by a portable belt conveyor to other stockpiles farther away. This 1½-in. gravel is transferred from the stockpiles to the hopper feeding the portable plant by a P. & H. shovel. A reciprocating feeder under the hopper sends the gravel to a belt conveyor that discharges to the lower deck of a triple-deck screen superimposed above the portable plant. The lower deck is equipped with 1-in. sq. openings for the larger part of the deck and 3/16-in. openings at the feed end. This split was made to produce a fine ag-

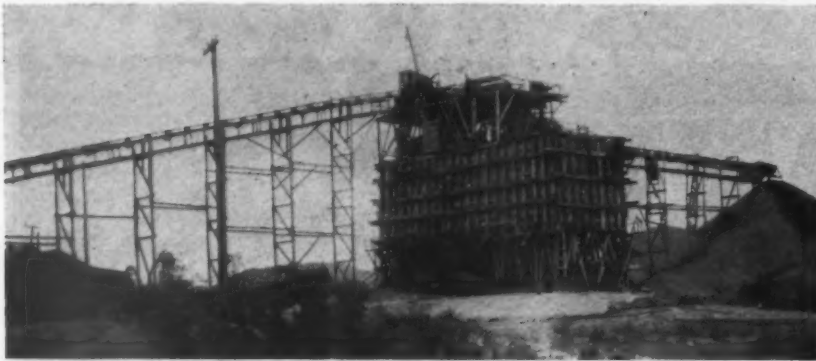
gregate for use in concrete block manufacture. The amount of 3/16-in. openings is determined by the amount of fine aggregates to be produced. The minus 3/16-in. gravel is chuted to ground stockpile from which it is reclaimed for delivery. The minus 1-in. gravel drops directly below the screen into a surge hopper that is part of the portable plant setup. Plus 1-in. gravel, crushed in a 10- x 36-in. jaw crusher, is elevated to the upper deck of the screen by two belt conveyors through a transfer station. The upper deck is also equipped with 1-in. sq. openings, and the product passing the screen is caught on the middle deck consisting of a blank plate that guides the gravel into the surge bin. Oversize is recrushed in an 18- x 30-in. roll crusher, the product returning to the upper deck of the screen by belt conveyors in closed circuit. A belt conveyor transfers the sized gravel from the surge bin to truck for delivery.

Becker County Sand and Gravel Co., Detroit Lakes, also has found a large demand for this 1-in. gravel, but since the deposit worked contains gravel that readily meets specifications for coarse aggregate for concrete highway construction, it has been found that as much as 100-tons per day can be robbed from the normal production of 500-tons per day of the 1½-in. product. During the ten years that this plant has been in operation, production has been concentrated on the 1½-in. gravel. When recent demands for the 1-in. aggregate became insistent, a change was made in the screening arrangement that proved capable of producing the 1-in. gravel by stealing it from the larger size, still allowing the concrete aggregate to meet State specifications.

After primary screening and crushing, the sand and gravel enters a rotary screen equipped with a scrubber section. After the sand has been removed in this trommel screen, the gravel is sized on a pair of vibrating screens. Normally, the only sizing that is made is the removal of pea gravel,



At the Hastings plant of Hallett Construction Co., gravel is sized and stored at final screening station. Fines are piped with wash water to stockpile as pea gravel; sand is separated at first screening station



Sand separation and gravel sizing at the Becker County Sand and Gravel Co., Detroit Lakes plant are accomplished with frommel screen at top of plant, sand cones, and two vibrating screens. When bin containing 1½-in. material is full, gravel is conveyed to stockpile, to the right

the oversize constituting an aggregate that would readily meet State Highway specifications for concrete aggregate. To produce the newly-required 1-in. gravel, a blank plate was placed on the lower section of the lower deck of one of the two screens with a small slot in the plate that permitted the 1-in. size to drop through into a bin. Experimentation determined the size of the plate and the size of the slot so that just enough of the product would be robbed from the concrete aggregate to still allow it to meet specifications.

The deposit worked at this location consists of from 6- to 20-ft. of sand and gravel, with sand predominating in a percentage of about 2 to 1. Clay and dirt overburden of from 2- to 4-ft. is stripped with a shovel that loads trucks for disposal. The underlying deposit is worked with a Northwest dragline with a 1¼-cu. yd. bucket that loads trucks for delivery to the plant. The trucks discharge through a steel rail grizzly, spaced at



At the J. L. Shiely Co., St. Paul, conveyor at lower left is carrying sand and gravel to top of plant for sizing. Conveyor system to the right moves sand to stockpile area

8-in., into a 30-cu. yd. hopper. An 18- x 48-in. Diamond reciprocating feeder under the hopper feeds the product to a belt conveyor for delivery to a 4- x 12-ft. double deck Simplicity scalping screen equipped with 2- and 1½-in. sq. openings on the upper and lower deck respectively. The plus 2-in. gravel is crushed in an 18- x 36-in. Diamond jaw crusher and the minus 2-in. plus 1½-in. product is crushed in a 3-ft. Symons cone crusher. The product from both crushers returns to the belt feeding the screen by another belt conveyor in closed circuit. The minus 1½-in. material is elevated to the top of the plant by a long belt conveyor, where it discharges into a box that feeds a rotary screen equipped with a scrubber section to wash out the small amount of clay that might be carried with the product. The screen, equipped with ½-in. sq. openings, has an outer jacket that has 3/16-in. sq. openings, and the sand passing the outer jacket is laundered to settling tanks. The gravel retained on both screens is split to two 4- by 8-ft. double deck vibrating screens, one a Telsmith and the other a Niagara. The Telsmith screen has 1- and ¾-in. sq. openings on the two decks and the Niagara has 1- and ¾-in. sq. openings on the two decks. For the production of the 1-in. gravel, the lower deck of the Niagara screen, with ¾-in. openings, is blanked off at the lower end, as described previously. The product passing the lower decks of the two screens is chuted to bins as pea gravel, while the product retained on both decks is sent to bins as specification concrete aggregate, or when the bins are full, is delivered by a belt conveyor to stockpiles. When the 1-in. material is not produced, the slot in the blank is covered and all of the oversize is produced as concrete aggregate.

Sand passing the rotary screen is laundered to a No. 7 Telsmith settling tank where concrete sand is collected. The overflow from this tank launders to a second No. 7 Telsmith tank with a screen mesh above it to collect ma-

sons' sand. Overflow from the second tank launders to waste. When sand bins are full, all of the sand launders to the waste flume, in which is located a settling box. This box collects a concrete sand that is discharged through a manually-controlled discharge gate to a stockpile below.

Although the deposit being worked is exceptionally clean, a total of 2400 g.p.m. of water is added at the rotary screen and at the final vibrating screens to help to assure the production of a clean product. About 60 t.p.h. of 1½-in. gravel and about 70 t.p.h. of sand and pea gravel is produced per hour. Necessarily, the production of 1½-in. gravel is cut down when the 1-in. product is made.

The deposit was worked by a Model 5 Northwest crane with a 1¼-cu. yd. bucket that loaded 4-cu. yd. trucks for delivery to the plant. The trucks deposited the load into a steel hopper through a steel rail grizzly spaced at 10-in. centers. Less than one percent of the product was above 10-in., therefore little waste was encountered due to boulders.

From the 12-cu. yd. hopper, a reciprocating feeder delivered the product to a 30-in. belt conveyor, 90 ft. centers, that elevated it to a 4- x 12-ft. double-deck Stephens-Adamson vibrating screen equipped with 3- and 2-in. sq. openings on the two decks. The plus 3-in. gravel was chuted to a 15- x 36-in. Diamond jaw crusher; the gravel retained on the lower deck was crushed in a 3-ft. Symons cone; and the minus 2-in. product was sent to a belt conveyor for delivery to final screening operations. From the crushers, the gravel returned to the screen by belt conveyor in closed circuit.

The product passing the 2-in. deck,



Turnhead at discharge end of conveyor, to the right, sends sand to stockpile below or to conveyor at left for movement to second stockpile, J. L. Shiely Co., St. Paul

delivered by belt conveyor to the final screening station, was received in a 3- x 16-ft. rotary screen with a 4-ft. scrubber section. Sand was separated here and the oversize, plus 3/16-in., was sized on a 3- x 8-ft. triple-deck Diamond screen. The upper and middle decks were equipped with 1- and 1/2-in. sq. openings, and the lower deck with 1/4- x 5/16-in. openings. The product retained on all decks was delivered by belt conveyor as a sized concrete aggregate to truck loading bins, and the pea gravel passing the lower deck was laundered to waste.

Sand separated at the rotary screen was collected in a sand drag, and discharged from the drag to a belt conveyor that elevated it to a truck loading bin. Overflow from the drag laundered to waste. Water at the rate of 2000 g.p.m. was used on the rotary screen and the final vibrating screen to thoroughly wash the product.

The gravel produced was well within specification limits, as was the sand. A comparison of the specifications as against the sand produced follows:

Screen	State Highway Specifications	Sand produced at plant
No. 4	95-100	98-100
No. 10	75-90	82-90
No. 20	45-65	53-62
No. 50	5-20	6-14
No. 100	0-5	0-2.5

The first set of screens, both crushers, and a 120-hp. Waukesha gasoline motor are mounted on a framework 29-ft. 8-in. long consisting of I-beams superimposed above three axles riding on 12 rubber-tired wheels. The belt conveyor framework can be dismantled and transported by truck and the entire plant is portable, permitting assembly in a relatively short time. Plant capacity is about 200 t.p.h.

Glacier Sand and Gravel Co., Minneapolis,



As gravel is sent into deshaler, a stream of water from the bottom of the tub floats off shale while gravel is reclaimed by endless chain bucket, Glacier Sand and Gravel Co.

neapolis, is another company that employs a slackline cableway system and belt conveyors to deliver sand and gravel from the pit to the plant. The deposit, averaging 30- to 50-ft. in thickness and composed of 75 percent sand, is excavated with a Sauerman scraper bucket that discharges into a hopper above the end of the first belt conveyor. The 24-in. belt conveyor, at 200 ft. centers, feeds a second similar belt through a transfer station. Discharge from the second conveyor is over a 30-in. x 6-ft. single-deck vibrating scalper screen that rejects the plus 1 1/2-in. gravel into a Diamond jaw crusher. The crushed product and the minus 1 1/2-in. material are elevated to the top of the plant by a 24-in. belt conveyor, 175 ft. centers, where it discharges over a 4- x 8-ft. triple-deck Diamond screen. Three sizes of gravel are produced and the concrete aggregate (1/4- to 1 1/2-in.) is cleaned in a deshaler before storage. The deshaler is similar to a sand drag with the exception that perforated buckets are employed to reclaim the gravel, while the shale washes away with the overflow. Prior to the installation of the deshaler, the shale content in the finished product was about 1/2 of 1 percent and now it is almost negligible.

Sand passing the bottom deck (minus 1/2-in.) is reclaimed in three tilting-discharge classifiers, each successive classifier collecting a finer product. Production capacity of 800-cu. yd. per 9-hr. day is stored in seven bins equipped with bottom-discharge gates for truck loading.

Oscar Roberts and Co., Minneapolis, also employs the slackline cableway scraper and belt conveyor system of transportation from pit to plant, a method that seems to have established a trend in Minnesota. About two-thirds of the deposit is sand, and is worked by a Sauerman system with a 1-cu. yd. scraper bucket that drags the material to a hopper above a belt conveyor. The primary scalping and crushing plant, located between the pit and the plant, is fed by this 18-in. belt conveyor, 175-ft. centers. Scalping is made on a 3- x 8-ft. single-deck vibrating screen with 1-in. sq. openings. Oversize is crushed in a 9- x 36-in. Diamond jaw crusher, crusher throughs joining the minus 1-in. product on a 20-in. belt conveyor for delivery to the plant some 300-ft. distant.

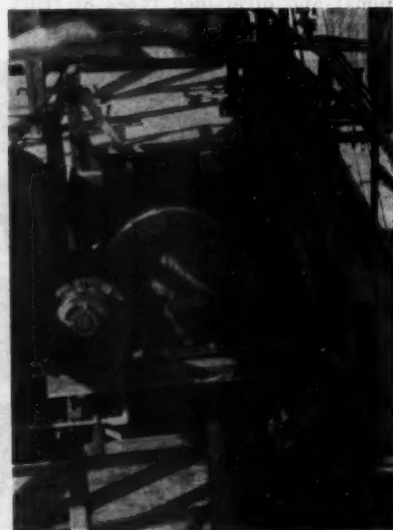
The conveyor discharges into a steel box where the product is met by a stream of water at 950 g.p.m. that forces the sand and gravel against the side of the box, assisting in breaking up the lumps and lubricating the product. Feed from this box is to a 3- x 8-ft. triple-deck vibrating screen with 3/8-, 1/2-, and 1/4-in. sq. openings on the three decks, respectively. Plus 3/8-in. gravel is washed in a deshaler similar to the one described previously and the minus 3/8-in. plus 1/2-in. gravel



Two conveyors running in opposite directions convey aggregates from primary screening and crushing operation to the top of the plant for final sizing. Reversing conveyors permits operations in a limited space at Industrial Aggregates Co., Minneapolis

is cleaned in another similar deshaler. Water is added from the bottom of the deshalers to float off impurities while the cleaned product is recovered by drag buckets on an endless chain. The product from the deshalers is chuted to bins. Pea gravel retained on the lower deck, plus 1/4- and minus 1/2-in., is chuted directly to bins. Sand passing the lower deck launders to three classifiers, with masons' sand collected in the first classifier through a fine mesh screen cloth in the launder. Bin capacity for storage is about 800-cu. yds. and production capacity is about

(Continued on page 97)



Sand is dewatered in large screw washer and classifier at J. L. Shieff plant near St. Paul

Haulage

Air-Entrained Concrete Delivered In Special Haulage Units

By E. R. CUSHING

AFTER SPENDING the war years on projects in Indiana, Texas, Utah, Arkansas and Washington and accumulating service stripes for producing over 1,000,000 cu. yds. of ready-mixed concrete on government contracts, the Kolinski Concrete Co. has re-entered the Milwaukee area ready mixed concrete market. The company's reconversion program has been made in familiar surroundings since the officers are former Milwaukee owners of the Pyramid Block Company and the Central Ready-Mixed Co. which started in 1928 and pioneered air-entrained ready-mix since 1938 in Milwaukee.

The new plant poured its initial batch of ready mixed concrete on July 19, 1946 but started in the planning stage back in May, 1944 when the five-acre plant site was acquired along the Kinnickinnick River in south Milwaukee. This strategic plant location receives material directly by lake boats and the Milwaukee and Northwestern railroads and reaches all the Milwaukee area market with comparatively short hauls.

Four salient points have governed the design and operation of the new plant; air-entrained type ready mixed concrete; large capacity; maximum varieties of concrete-mix combinations; and diversified types of truck delivery.



Showing tunnel conveyor discharging to inclined belt conveyor up to the top of the batching plant bins



Milwaukee Journal Photo
Batching plant has dual 3-cu. yd. mixers, a 380-ton, six-compartment aggregate bin, and a 3000-bbl. cement storage bin in two compartments

The Kolinski Concrete Co. officials believe that air-entrained concrete offers the best product delivered to the job. Using Butler type batchers, the concrete mix is designed to meet specific conditions of haul and type of construction. Air content averages 4½% and, except on City of Milwaukee

projects, the operator prefers to base the air-entrainment proportioning on his own experience. Batch design also includes precautionary standards to prevent truck equipment overload on rough city streets.

The large capacity requirements in the original planning has been met by the construction of riverside docking facilities for self-unloading lake boats discharging aggregates directly over the 300-ft. length storage pile tunnel. A 30-in. tunnel belt conveyor of 600 t.p.h. capacity delivers the aggregates to a like capacity, 18-deg. pitch, inclined belt for the 380-ton overhead aggregate bins. Cement is delivered in bulk into a 40-bbl. hopper, and elevated at 350-bbl. per hour rate into the 3000-bbl. capacity cement bins above the dual 3-cu. yd. T. L. Smith air-tilted mixers. Integrating these components results in a 200-cu. yd. per hour ready-mixed concrete production that has peaked at 250 cu. yd. p.h.

Offer Many Types of Concrete

Maximum varieties of concrete-mix combinations are achieved mainly by compartmentation of the large overhead batching bins, both cement and

aggregate, batching into the Butler automatic controlled batcher for the dual mixers. The 380-ton aggregate bin is divided into six compartments normally holding five types of coarse aggregate and one of sand. The 3000-bbl. cement storage capacity consists of a 1600-bbl. bin and a 1400-bbl. bin, each having two compartments and allowing storage for any combination of four-types, qualities, or brands of cements.

Two types of 5-cu. yd. capacity truck delivery are now operating and a third type of special design 5-cu. yd. Jaeger Hi-Discharge containers are on order. Present hauling is done with six Jaeger transit mix trucks and nine Dumperete dump trucks.

The transit mixing trucks are used for deliveries up to about a 25-mile haul or one hour plant-to-forms time. Except for special operating requirements, the transit mixing trucks are used principally for long-haul delivery.

Dump Trucks Used for Short Hauls

The Dumperete trucks at present are usually confined to deliveries under six miles or ½-hour plant-to-forms. Although other operators claim to have used this type of dump truck, hauling 10 miles or one hour plant-to-forms, this operator bases his shorter limit-haul requirement on two special limiting factors; time delays unpredictable in city traffic; and the unavoidable use of hot cement causing acceleration of the concrete setting-time. The cement is delivered in the Milwaukee area by barge from the mills and moved to the plant in bulk trucks. The present heavy demand for cement occasionally results in hot cement arriving at the plant storage bins.

The Dumperete truck body type was designed by Glenway Maxon, Milwaukee consulting engineer, who also assisted in the plant design and fabrication. The body features a 90-deg. dumping angle, 6-ft. 3-in. discharge height and a hardened aluminum dumping chute. M. C. Kolinski, president of Kolinski Concrete Co., states that the use of Dumperete delivery, properly regulated, delivers a satisfactory air-entrained concrete at a favorable economical cost, and advocates further detailed study of the



Dumping air-entrained concrete from special dump body into chute which directs concrete into forms. Short hauls are handled with this equipment

operation of this type equipment as mandatory with the users to establish definite standards. It is intended to use the Dumperete trucks for winter hauling for snow removal and coal deliveries.

The specially designed Hi-dump bodies on order are to feature a 5-cu. yd. capacity for 5000-lb. body weight and an agitating discharge using a power take-off from the truck motor to facilitate a clean discharge.

The Kolinski Concrete Co. considers the added cost of installation to obtain a highly versatile operation as being necessary to meet the specific requirements posed by the Milwaukee area.

In addition to the mixer plant prop-

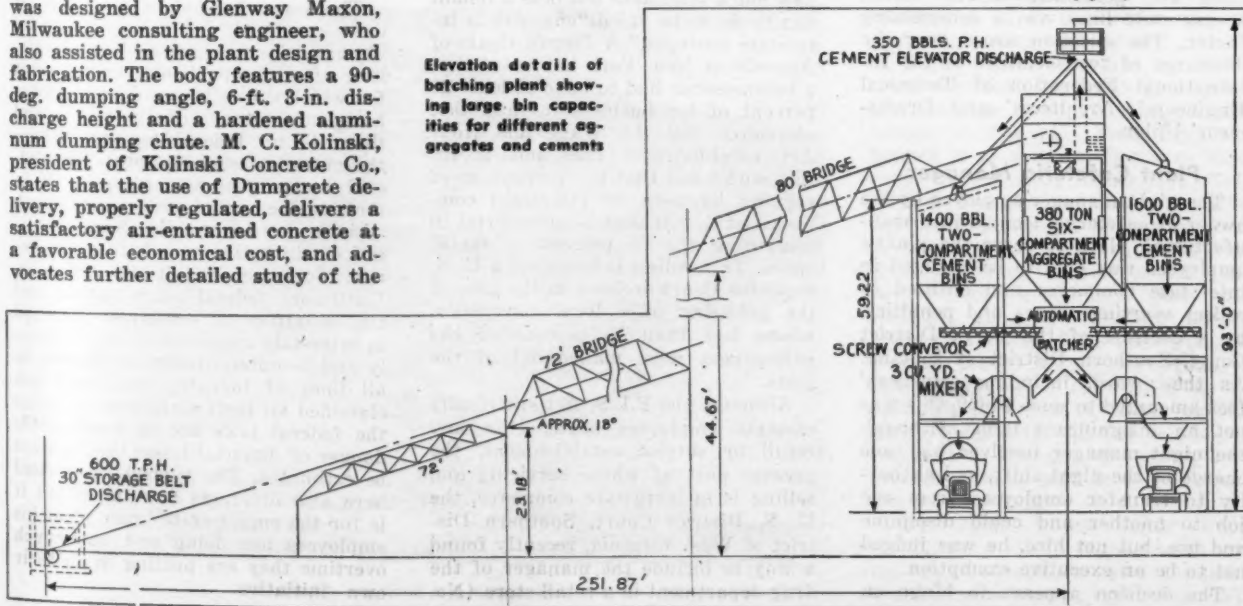
er, the operating office building is also worthy of note. Constructed of Way-lite concrete blocks, the two-story building has a neat, efficient appearance and houses the dispatcher's office and a large locker room on the first floor, supervisory offices on the second floor, and a three-truck capacity, well-equipped maintenance and repair shop in the back two-story space.

Aggregates used are as follows:

MATERIAL	SIZES
Gravel	1½-in.-¾-in.
Gravel	1½-in.-¾-in.
Gravel	¾-in.-¾-in.
Sand	20% thru 50% mesh
Gravel	1½-in.-¾-in.
Gravel	¾-in.-¾-in.

(Continued on page 86)

Elevation details of batching plant showing large bin capacities for different aggregates and cements



LABOR RELATION TRENDS

By NATHAN C. ROCKWOOD

AS EVERYONE should know, the authority for federal legislation on labor relations hinges on the clause in our Constitution which gives the federal government jurisdiction for the regulation of commerce between the various states—interstate commerce. Originally the federal courts' decisions were within rather narrow limits in defining "interstate commerce"; but for many years, and particularly in the last 12 years, definitions by federal government bureaus and the federal courts have been extended and widened.

Constantly New Definitions

Naturally, the attempts to broaden the definition of interstate commerce leads to many interesting, and to the layman at least, puzzling situations. In the first instance the lines are drawn by the federal administrators, and by the precedents they and the courts have established. In the final instance, the courts, up to and including the United States Supreme Court, must decide in specific cases without precedent. In order to illustrate the anomalies that constantly arise, even today after more than ten years' administration of the National Labor Relations Act and the Fair Labor Standards Act, here are a few recent decisions:

A company which designs and constructs office and industrial buildings in any part of the country, by a National Labor Relations Board decision (Case No. 13-C-2664, August 29, 1946) was held to be engaged in interstate commerce, although the engineering force involved was employed in Chicago. The fact that the company "caused a substantial amount of layouts, blueprints, designs, specifications and personnel" to be moved across state lines was a determining factor. The question arose over the discharge of two members of the International Federation of Technical Engineers', Architects' and Draftsmen's Union.

Plant Cafeteria Manager

The night manager employed by the owner of cafeterias located in a manufacturing plant to serve the plant's employees was held to be engaged in interstate commerce and entitled to collect overtime wages and penalties, by a decision of the U. S. District Court, Southern District of Indiana. As the award, including attorneys' fees amounted to some \$1600, this was not an insignificant item. Although the night manager involved had sole charge of the night shift, had authority to transfer employees from one job to another and could discipline and fire, but not hire, he was judged not to be an executive exemption.

The decision appears to hinge on

the fact that the cafeteria was an integral part of the plant's operations although not a part of the manufacturer's organization, being the private enterprise of the cafeteria owner. In the two years the night manager was employed as such his salary was raised three times from \$35 per week to \$60 per week for a 48-hour week (by individual agreement) and he was paid pro rata for overtime. He punched no time clock and was allowed some latitude as to his actual time worked; and he kept his own time record, although not required to do so. As a matter of fact, the judge admitted that the hours claimed to have been worked in this record "was largely in excess of the hours I have found that he actually worked." Nevertheless, the court computed his hourly wage at his various weekly salary rates and allowed him overtime after 40 hours per week, at the hourly rate in effect at the time.

The 20 Percent Rule

The administrator of the Fair Labor Standards Act, has recently attempted to define what particular building maintenance employees come under the law, on the theory of their participation in interstate commerce. It illustrates, as well as anything can, the fine distinctions that are now being drawn. The administrator applies what is known as the 20 percent rule, which broadly means that if 20 percent or more of the space is occupied by tenants engaged in interstate commerce, the building maintenance employees are likewise employed in interstate commerce—a purely arbitrary ruling that as yet has not been tested in the courts.

The question naturally arises as to how much interstate business a tenant has to do to be ruled "engaged in interstate business." A Circuit Court of Appeals at New York has ruled that a businessman had to have at least 20 percent of his business in interstate commerce, but the Wage and Hour Act administrator does not accept this, and holds that the percentage of regular business in interstate commerce of any tenant is immaterial in computing the 20 percent of rental space. This ruling is based on a U. S. Supreme Court decision in the case of the publisher of a local newspaper, where less than 1/2 percent of the newspapers were mailed out of the state.

Although the F.L.S. Act specifically exempts employees engaged in any retail or service establishment, the greater part of whose servicing and selling is in intrastate commerce, the U. S. District Court, Southern District of West Virginia, recently found a way to include the manager of the drug department in a retail store (No.

589, May 31, 1946), if he could have proved that at least 20 percent of his time was spent in handling shipments to other company stores, some across a state line. The particular store at which the manager worked was used to some extent as a distributing center for stores in an adjoining state, so that the court held the goods did not come to rest in this store, but continued in interstate commerce, and that the drug department manager's time spent in receiving and handling such shipments and reshipments was to that extent engaged in interstate commerce. Fortunately for the employer, it was possible to prove that the manager actually spent less than 8 hours a week at this work, although he claimed 35 to 40 percent of his time was thus spent.

The same district court subsequently dismissed the petition of a night janitor employed by a bank in its office building, which was partly occupied by the bank and partly by tenants engaged in other business, some of whom do business connected with interstate commerce. The court ruled that none of these tenants was engaged "in the production, shipment, sale or delivery of any kind of goods in interstate commerce, or in controlling such production." The janitor's principal duties were to sweep and dust the offices of the tenants, keep the furnace going and occasionally operate an elevator. He sued for overtime, amounting to nearly \$3000 covering a 3-year period, based on his own estimate of voluntary overtime.

Although the court need go no further than rule that the janitor was not an employee engaged in interstate commerce, it did add that he had accepted his pay checks without question, and that he had no legal right to go back and ask that his compensation be based on overtime wages not previously agreed upon.

Comment

These are typical of the kind of cases constantly being brought up by discharged or disgruntled employees, long after the particular employment for which suit is brought. Some states have no statutes of limitation and there is no federal statute. Where the state has such a statute the federal courts generally recognize it in limiting the period within which such actions may be brought. Such a statute of limitation was before the recent Congress, but it did not pass. Until such federal act is passed, and the definition of employees engaged in interstate commerce is more sharply and definitely drawn, employers in all lines of industry who have not classified all their employees as under the federal laws are in considerable danger of financial losses that can not be estimated. The typical cases cited here also illustrate how important it is for the employer to know what his employees are doing and how much overtime they are putting in on their own initiative.

Bellevue Sand and Gravel Co., Bellevue, Iowa moves to new deposit on other side of plant. Pit operations resemble quarry practice in exposing high face so that characteristics of materials are revealed for excavation

By H. E. SWANSON



Material in recently opened deposit is reclaimed by crawler-mounted crane equipped with 1-cu. yd. clam-shell bucket which loads hopper above feeder belt that feeds long conveyor to the plant

Movable Hopper-Conveyor Reduces Haulage

ONE of the few sand and gravel operations in Iowa not bothered with impurities in the deposit to the extent that would necessitate installation of additional equipment, is the Bellevue Sand and Gravel Co., Bellevue, Iowa. The ratio of sand and gravel is ideal, with gravel comprising 60 percent of the deposit, just about the perfect proportion for the production of concrete aggregate.

With such an excellent deposit from which to work, the screening and washing operations are simple

and economical. Gravel sizing is made on revolving screens and sand is reclaimed in a Rotoscoop, which has been able to reclaim more fines than other methods of recovery tried here.

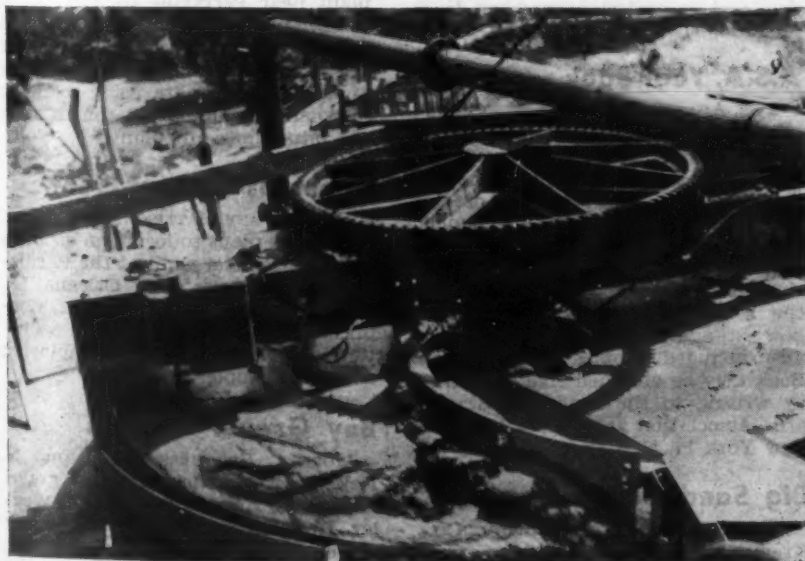
In April, 1946, operations were started at a new pit located on the opposite side of the plant and the depleted deposit, one that had been worked since 1925. The new deposit, as well as the older one, is a dry pit operation and the material is reclaimed by a crane for loading the

belt conveyor to the main plant. The belt conveyor system used at the original deposit was moved in sections from one side of the plant to the other, and in a period of three weeks was in place and ready to operate from the new deposit.

Washing, Screening and Dewatering

The 40-ft. stratum of sand and gravel has an overburden varying from 6- to 25 ft., which is stripped by a Link-Belt crane and placed between the deposit and the nearby Mississippi River to form a dam to prevent flooding during the periods of high water. Another Link-Belt crane recovers the sand and gravel and loads an 18-cu. yd. semi-portable hopper in the pit. Feed from the hopper is to a 24-in. Northern Conveyor Co. swinging feeder belt, 60-ft. centers. The product discharges from the feeder belt to a 24-in. belt conveyor, 250-ft. centers, equipped with Quaker Rubber Co. belting and Timken rollers and idlers, and constructed on the standard 18-deg. angle of incline. This conveyor discharges into a hopper at the top of the plant with a split feed to two batteries of three revolving screens each. The product in the hopper encounters a stream of water, sent through a 2-in. pipe by a 6-in. Dayton-Dowd pump.

The same pump sends water through two 1½-in. pipes, one to each battery of screens, to spray the product during screening operations. The



Sand is recovered in a Rotoscoop

total amount of water received at these points is 850 g.p.m.

All sizing and desanding is done on the trommel screens, each one 99 in. long, 58½ in. in diameter at the feed end, and 30½ in. in diameter at the discharge end. The top screen in each battery is equipped with 1¾-in. round openings; the middle screens have ¾-in. sq. openings; and the lower screen on one battery has 5/16-in. sq. openings while the lower screen on the other battery has ¼-in. sq. openings. Sand passing the two lower screens with different screen mesh has been found to meet specifications better than if the two screens both had the same size openings.

Gravel retained on the top screens, above 1¾ in., is chuted to a stockpile adjacent to the plant, while other sizes are binned as sized gravel. Less than 6 percent of the total feed to the plant is above 1¾ in. The aggregate passing the two lower screens launders to a Link-Belt Rotoscoop for dewatering, and drops to a sand bin below or is diverted to a 24-in. belt conveyor, 20-ft. centers, that conveys the sand to another sand bin adjacent to the main bins. When both sand bins are full, or when sand is not produced, the product from the lower screens by-passes the Rotoscoop and is laundered to waste. Overflow from the Rotoscoop is also carried by the same launder to waste. In the launder is a small box in which fines are recovered when desired.

Large Storage Bin Capacity

Three concrete silo-type bins, each with a capacity of 100-cu. yds., constitutes the storage capacity of the main plant. Adjacent to these bins are two wooden bins, each with 75-cu. yds. capacity, for auxiliary storage and blending. At times there has been a market for black top aggregate, which consists of a blend of sand and pea gravel. When this product is made, sand is sent to one of the wooden bins by belt conveyor, and pea gravel is diverted from the screen to a stockpile outside the plant instead of to the bin under the screen. The pea gravel is picked up by crane and placed in the wooden bin containing the sand in a proportion necessary to meet the requirements for black top aggregate. Pea gravel in the silo bin is sold as roofing gravel.

The concrete bins have discharge gates on one side for loading railroad cars and discharge gates on the opposite side for truck loading. The manually-operated gates feed chutes for discharge to cars or trucks, and each chute is equipped with a ¾-in. slotted screep. Water is sprayed over the product as it passes down the chute and fines adhering to the



Belt conveyor was moved to the other side of the plant in 1946 to reach the new deposit

gravel are washed to waste through the screen, under which is a 8-in. pipe to carry the waste product away. The wooden bins have bottom discharge for car or truck loading.

Capacity of this plant is about 80 tons per hour. It was designed by the Link-Belt Co. and has been in operation since 1925 at this location. Arthur Schneider is president of the Bellevue Sand and Gravel Co., and Frank Schneider is vice president.

Haulage

(Continued from page 83)

Huron, Badger, Manitowoc and Medusa cements are delivered in bulk by barge and trucked to the plant using two 45 bbl. dump trucks owned by the operator and a 100 bbl. double-conveyor discharge truck owned by a contractor.

The present operating force consists of 22 men and will reach a total of 30 men when the eight additional truck bodies are delivered. The supervisory staff of the Kolinski Concrete Co. consists of M. C. Kolinski, president; Willard L. Schunk, vice-president and general manager; and Jesse Mount, plant superintendent.

A.S.A. Year Book

THE AMERICAN STANDARDS ASSOCIATION, New York, N. Y., has announced publication of its 1945-46 Year Book, the first since 1938. Information about officers and members of the board of directors, standards council, and other committees of the association are given in the book. The constitution and by-laws of the A.S.A., the setup of the organization and how standards are developed, are also included. Copies of the Year Book may be obtained free of charge by writing to the American Standards Association at 70 East 45th St., New York 17, N. Y.

Big Sand Contract

THE SCHMIDT CONSTRUCTION Co., Kremmling, Colo., has been awarded a \$99,000 contract for processing sand and gravel for the Colorado-Big

Thompson project, according to Assistant Reclamation Commissioner William Warne. The contract involves 70,000 cu. yd.

Co-operative Phosphate

REPRESENTATIVES of farming organizations in Utah, Idaho and Wyoming met recently in Salt Lake City, Utah with officials of the Utah Farm Bureau Federation to study plans for the manufacture of phosphate fertilizer in the inter-mountain region. A co-operative project was discussed.

To Build Lime Plant

CUTLER LA LIBERTE McDUGAL CORPORATION, Superior, Wis., is the name of a newly organized lime manufacturing concern which will be affiliated with the Cutler-Magner Corporation, Duluth, Minn. Arrangements are being made to purchase a rotary kiln, 8 ft. 2 in. by 327 ft.

Sell Quarry

THE WORLOCK STONE Co., Canastota, N. Y., has sold its quarry and plant near Perryville to interests in Tonawanda, N. Y. Ralph Balducci and his family have had control of this property for 22 years. A number of improvements are being made at the plant, including the construction of a bituminous mix plant.

Asbestos-Cement Plant

KEASBEY AND MATTISON Co., Ambler, Penn., has plans to locate an asbestos cement products plant at the Pendleton shipyard site, New Orleans, La. According to John W. Ledebor, vice-president, the plant will begin operation about January 1, employing about 100 people.

Buy Gravel Business

MOCKEL BROTHERS, Williston, N. Dak., have sold their sand and gravel business to Howard and Charles Wegley. Howard Wegley has been county surveyor and assistant city engineer, and Charles Wegley has been with the Farmers Union Lumber Co.

Raw Mix Blending Calculated Graphically

Method developed by Puerto Rico Cement Corporation saves time and requires only simple arithmetic

By JOSE E. BERROCAL

ABOUT three years ago the author introduced in the controlling laboratories of the Puerto Rico Cement Corporation, a method for the graphical solution of mixing problems. This method proved to be very practical, reducing calculating time and eliminating most of the arithmetical work and therefore possible errors. The purpose of this article is to explain the basis and use of this method.

As in other cement plants, our practice is to mill a mixture of limestone and clay so as to be lower but approximate to the required percentage of calcium carbonate in the mix. Six tanks are used for the storage of this low carbonate mix.

Another tank is kept full of milled limestone alone to blend with the others. Calculations are made to determine the proportion into which the low and high slurry should be mixed in a mixing basin to obtain the required percentage of carbonate.

Before the graphic method was introduced, calculations were carried on by means of the following formula:

$$Y = K \frac{(H-D)}{(D-L)}$$

Y = volume of high slurry needed
 D = percentage dry CaCO_3 desired

L = percentage dry CaCO_3 in low tank

H = percentage dry CaCO_3 in high tank

K = volume of low slurry to be mixed

In this formula, volume is used in combination with percentage by weight of dried slurry without taking into account the moisture of the blending slurries, because the moisture in all cases is very nearly 40% and therefore the error introduced is very small.

The arithmetic involved in the formula is very simple, comprising just two subtractions, one multiplication and division; besides any slide rule can be used for doing the multiplication and division, but the boys in charge of this operation lack the necessary training in arithmetic and slide rule manipulation so that any simple way of doing the work was advisable.

The method to be described proved to be easier to understand and more simple than the slide rule.

Taking K as a variable (say X) the above formula is changed to $Y = X \frac{(D-L)}{(H-D)}$ and being an equation of the first degree can be represented in a rectangular coordinate by a straight line. (See graph) As

$Y = \frac{(D-L)}{(H-D)}$ the straight line representing the equation for any given values of D , H and L can easily be traced plotting a point $(D-L)$ on Y axis and $(H-D)$ on X axis, and drawing a straight line through this point and the intersection of X and Y .

Having drawn this line, any pair of values for X and Y can easily be determined. In our case as all the storage tanks are cylindrical and equal in area and height, the volumes are measured in inches of height. The value of X is a constant ($K=72$ in.), thus simplifying the problem as to finding the corresponding value of Y for any given condition. In the graph a heavy vertical line is drawn at the value of 72 along the X axis, and therefore all values of Y lie on the intersection of this line.

Having explained the principle upon which the method was designed, the following problems will illustrate its use:

PROBLEM 1—

A volume of 72 in. of slurry 75.0% CaCO_3 is to be mixed with limestone 92.0% pure so as to raise it to the desired percentage of 77.0. Calculate the volume of limestone required.

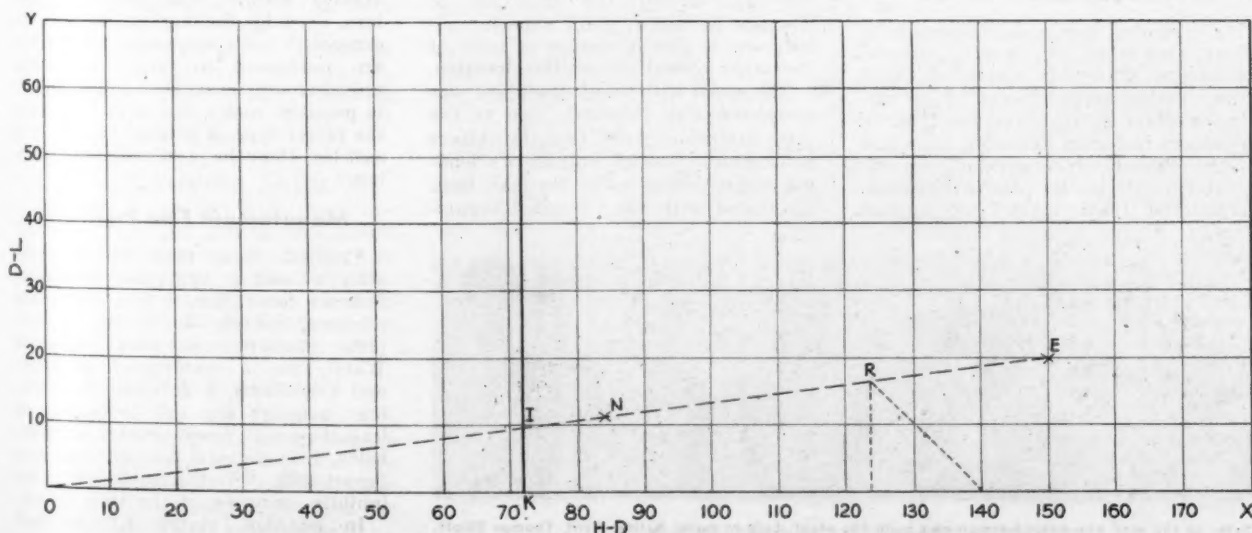
SOLUTION—

$$(H-D) = (92.0-77.0) = 15.0$$

$$(D-L) = (77.0-75.0) = 2.0$$

With the above coordinates $X = 15.0$, $Y = 2.0$, a point can be plotted to draw the equation line, but for the sake of accuracy coordinates 150 and 20 are taken. This is represented on the graph as point E . The length of the intersection KI is the answer to

(Continued on page 103)



Graph which is used to quickly determine required percentage of calcium carbonate in the mix

Dry Mix Concrete

AUTOMATIC BATCHING of Sacked Dry Mixes

**Harry T. Campbell Sons' Corporation
adds four dry mixed concrete products,
and two power industry materials**

**By ROBERT F. PORTER
and ARTHUR C. AVRIL**

ADDING to its already diversified operations as producers of sand and gravel, ready-mixed concrete, bituminous concrete, face stone, whit-



Push-button control station in batching plant.
Note signal lights to the right

ing, calcium carbonate, agricultural lime, and other non-metallic mineral products, Harry T. Campbell Sons' Corporation recently started operating a plant to manufacture Sakrete products under an exclusive franchise from Sakrete Incorporated, Cincinnati, Ohio, to use its patented process, registered trade mark, and special

formulae, in the Baltimore marketing area.

This decision to enter the dry pre-mixed concrete field under a Sakrete franchise was based on more than a year of investigation of the industry's possibilities and manufacturing methods by the executives of the company, Messrs. Bruce S. and H. Guy Campbell and Mr. Robert F. Porter.

Under this agreement, plans and specifications for the plant and equipment were furnished. Construction was started late in 1945 and in spite of many obstacles due to major strikes in the steel and electrical industries and to material shortages, plant operation began in March of this year.

The Sakrete plant is located across the dual highway from one of the sand and gravel plants on the outskirts of Baltimore, Md., known as White Marsh, where concrete aggregate, ready-mixed concrete and bituminous mixtures are produced. Choice of this location provided rail facilities for shipment to outlying points in the territory, aggregate at the source of supply, testing facilities and plant supervision, under the direction of Thomas E. Elliot, plant superintendent, who is also in charge of some of the other operations at this location.

The speed with which the plant was completed was primarily due to the close attention given to it by Albert S. Cummins, one of Baltimore's leading construction men. He has been associated with the Campbell organi-



Robt. F. Porter

zation as a consulting engineer for several years.

The direction of Sakrete sales and operations are under the general supervision of Robert F. Porter, plants engineer and manager in charge of all sales. His two assistants, two returned G.I.'s, who will devote their time exclusively to Sakrete sales, are Harry A. Belt and Dennis Hoffman.

They are following the marketing and selling plan furnished, under the agreement, by Sakrete Incorporated. This plan was developed from ten years of actual experience in the Cincinnati marketing area. By directing sales energies to the known logical users of Sakrete the plan has saved years of trial-and-error marketing and placed the business on a profitable basis immediately.

In the plan, advertising costs are carefully analyzed for the most productive results. Standardized circulars, used by the various Sakrete licensees in their respective territories, are purchased in large quantities, reducing unit costs to a minimum. It is possible, under this system, to use the better type of printed matter at a cost less than the most ordinary printing.

Manufacture Five Products

Products being made include Sakrete, a coarse aggregate concrete; Sakrete Sand Mix, a fine aggregate mixture; Sakrete Mortar Mix, a complete masonry mortar; Sakrete Water-Tite, a waterproof mixture; and Cablekrete, a patented fireproofing material for the protection of lead-sheathed power cable in man-holes. This material not only acts as a fireproofing for the cable but also inhibits corrosion of the lead sheath.

In addition, Harry T. Campbell Sons' Corporation is exclusive agent



Some of the men who helped design and build the plant. Left to right; Arthur Avril, Thomas Elliott, Albert Cummins, Dennis Hoffman, and Harry Belt

for Cablelube, a Sakrete product which is a special inorganic power-cable pulling compound having the unusual features of acting as a lubricant and also inhibiting corrosion of the lead sheath in ducts commonly caused by acids and alkalis in underground waters. It also inhibits corrosion due to low potential electrolysis. Both Cablekrete and Cablelube are exclusive Sakrete products which were developed in conjunction with power company chemists.

Two Men Operate Plant

The many automatic features incorporated in the plant make it possible to operate at capacity with only two men. The dryer is fed automatically at the proper rate to assure uniformly bone dry aggregate. The cement supply is also fed automatically. The entire operation revolves around a push-button control box at the bagging station, permitting the operator to control production speed in direct conformity to his efficiency and experience by merely pushing two buttons in proper sequence, one to start batching and mixing, and the other to dump the batch into the bag.

Many of the automatic features which make it possible to batch and mix the contents of each sack individually by mechanical means with an absolute minimum amount of manual labor are patented, or are under pending patents. By means of these special features uniformly proportioned mixtures are assured. There can be no short weight, nor can there be an excessive overweight because of the completely interlocked electrical control systems.

To further reduce manual labor, Twin Tilt Trucks are used for hand trucks, to handle the packaged material from the bagging station to storage and from storage to trucks or freight cars. This unit picks up a full stack of sacks at one time without the need for rehandling each sack. These trucks are manufactured by the Twin Tilt Truck Co.

In addition to the plant operated by Harry T. Campbell Sons' Corporation, other plants under similar Sakrete franchise agreements are being built in other marketing areas.

Gypsum-Carrying Ships

PANAMA GYPSUM Co., has announced that the Federal Shipbuilding and Dry Dock Co., is building two gypsum-carrying ships. The ships will transport gypsum rock from ports on the Bay of Fundy to plants on the United States Atlantic coast.

Sell Building Materials

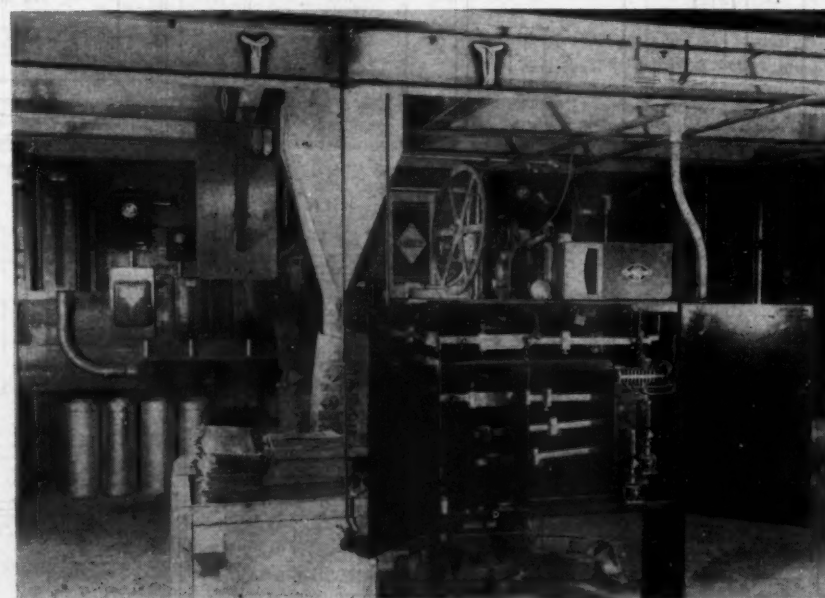
STEWART SAND AND MATERIAL Co., Kansas City, Mo., has constructed a new building where a complete line of builders material, hardware, and supplies will be carried in stock for both wholesale and retail sales.



View of Sakrete plant showing aggregate hopper, to the left, dryer, and batching and sacking plant to the right



Electrical control panel for almost automatic operation of the batching and sacking operations. Bagging station to the left



Scale beam cabinet for automatic batching operations

Instrumentation and Control of the Vertical Kiln

Describe simple system of controls for small operation and more complex instrumentation for larger plants

By VICTOR J. AZBE*

MOST LIME KILNS of the past completely lacked instruments that may have aided the operator. However, these kilns were natural draft type and as such there was no apparent draft to measure or control. Most of the kilns were also of the open top type and therefore there was no definite point to measure temperature.

More recent kilns are complex, and for best operation, instruments and controls are necessary. These will vary somewhat and must be fitted in part to the particular system and in part to the technological advancement of the respective plant crew.

Kiln systems involve those for

small and large stone, of high and low capacity, for high and also low temperature operation. There is the high type kiln with superimposed storage zone, or the low type with exhaust fan connected to the kiln top.

Most kilns are of induced draft type, but they may also be of forced draft with a fan blowing air into the cooler, or they may be of balanced draft arrangement, when both the exhaust fans in the kiln top as well as the forced draft fan operate simultaneously and combined create a balanced state on the firing level.

Instrumental variations of the system are also brought about by the respective firing method which may

involve coal, wood, oil or natural gas fuels. It may be oil directly injected or oil gasified in the center burner. It may be coal gasified in a centrally located gas producer for a group of kilns or separate small producers located integral to each kiln. About the same conditions would apply to wood or charcoal, which may be used when conditions demand a higher temperature than can be obtained with wood.

Instrumentation can be carried out to an extreme point, but as to what constitutes the *extreme*, no two operators would agree. Some want complete instrumentation and if they make use of it, it will prove well worth while. For others the same system just creates confusion and they are almost better off with no more than one or two gauges; a system, for example, such as that illustrated by Fig. 1.

In this connection we must realize the importance of draft. An ordinary natural draft kiln may produce about 10 tons of lime, somewhat more or less. It cannot produce much more, no matter what is done, as only low gas velocity is possible with the low draft available and at low velocity, heat transfer is poor and capacity is therefore low.

With a fan, draft is increased and heat transfer also is increased which can be carried so far that a rearranged kiln without increasing its

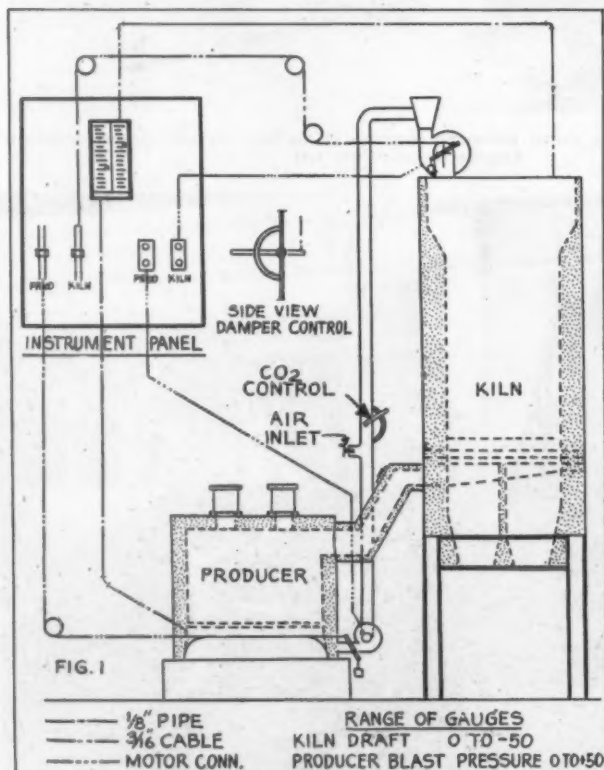


Fig. 1: Comparatively simple instrumentation for vertical kiln and integral producer

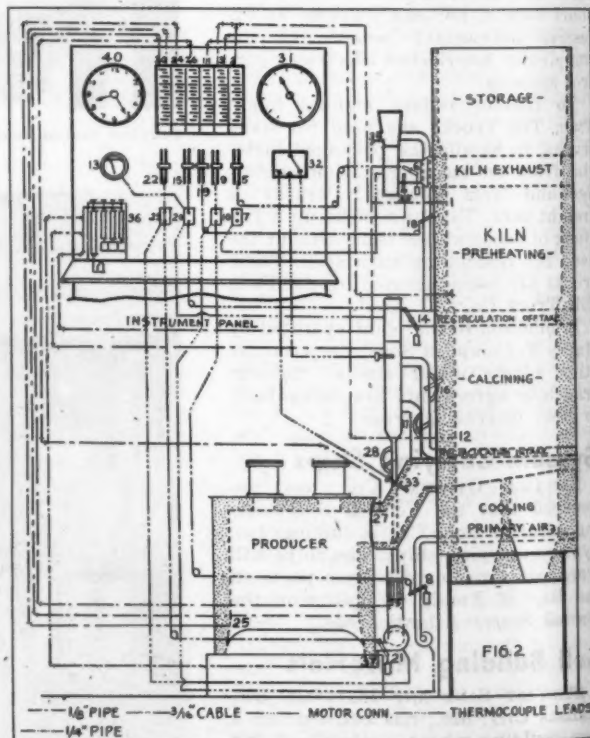


Fig. 2: Complete instrumentation and control arrangement for high kiln and integral producer

size, can produce from three to four times more lime.

Merely increasing the draft does not do this altogether, as the kiln must be arranged for this high capacity. The fuel supply must be ample, there must be provisions for distribution, also for ample and frequent stone supply. One is still inclined to wonder, however, which primarily is responsible for the high capacity. Is it the kiln, or is it the fan?

As matters stand, the draft and gas generating systems with the temperature control system makes the high capacity kiln possible. One should therefore feel amply justified in doing a fairly good job of instrumenting and of learning to control the kiln in accordance with these instruments.

Learning to use the instruments and to properly interpret what they show, is not altogether a simple matter, but a modern high capacity kiln is not a simple unit either and its response to good control is such that it justifies much study.

Through the following pages we will discuss several different systems of instrumentation. Fig. 1 is the very simplest. Fig. 2 is quite complex, but still not as complete as some may wish. Automatic draft and producer pressure control could be added, but as in almost all instances it would generally be omitted, for the present it also will be ignored.

Simple Instrumentation and Control of Vertical Kiln

Fig. 1 shows a simple low kiln with integral gas producer. It even lacks a hot zone recirculating provision for temperature control. Only instruments which are absolutely necessary are shown. There are a minimum of dampers; there are two motor controls, one for the kiln fan motor, the other for the producer fan motor.

Instruments and most controls are mounted on a conveniently located board. One of the draft gauges is connected to the kiln top; it should have a 5-in. minus water gauge scale. Control of this will be obtained by the corresponding lever on the board from which a cable leads to the damper in the suction connection of the kiln fan.

The second gauge indicates the pressure in the producer ash pit. It is regulated by the corresponding lever with a cable leading to the damper in the discharge connection of the producer fan. The gauge should have a 5-in. plus water gauge scale.

The gauges preferably should be of the mechanical bellows type, of bold numerals easily read at a distance rather than liquid glass tube gauges, which require frequent adjustment and are difficult to read. A prominent impressive gauge also has a psychological effect on the fireman and he will pay far more attention to it than to something which is inconspicuous

and at which he likely needs to squint to obtain a reading. Gauges can be readily improvised from bent glass tubing, but any money so saved will be lost many times over through lack of respect for such equipment.

With the kiln draft the amount of air admitted is regulated and by the producer ash pit pressure the amount of gas produced is controlled.

In addition with coal, (but not with wood) certain other controls are necessary. At times steam is used to prevent coal ash clinkering, but waste kiln gases, due to their CO₂ content, serve this purpose just as well and do not cost anything. Fig. 1 shows the required connection and controls to properly blend the air and the CO₂. Once the proper ratio is established it seldom needs to be changed.

About three to five percent CO₂ in the blast will reduce clinkering to the minimum. To determine this percentage, a gas analysis apparatus would be needed. But we are assuming that

this is a simple system and such an instrument is not on hand, and one is really not absolutely necessary.

The ash bed is gauged for ash and fuel bed thickness regularly anyway. A half inch rod run to the grates is allowed to remain in the bed for 1½ minutes. On withdrawal it will show the ash zones and the hot zone of the producer. Judging by the heat of the hot spot on the bar the CO₂ admittance can be controlled without resorting to gas analyses. The hot spot should be hotter than good red and cooler than white, a sort of orange color, although that would vary with the fusing, clinkering tendency of the ash.

This simple system entails no temperature measurements, no gas flow evaluation by draft drop. It does not take care of the used hot zone recirculation scheme, nor does it attempt to actually measure the amount of air flowing into the producer, nor the pressure of the produced gas.

Part 2: Complete instrumentation and control for integral producer-kiln system

FOR COMPLETE CONTROL of a one-kiln unit, consisting of the kiln proper and its integral gas producer, the arrangement in Fig. 2 is shown. It is not nearly as simple a system as shown in Fig. 1, but neither is it as complicated as it appears. If all of the features shown are not wanted, those deemed unnecessary can be eliminated.

The kiln shown is the Azbe High Type, having the superimposed storage zone and submerged gas offtake. The additions in this kiln over those in Fig. 1 provide for hot zone recirculation, as well as primary air supply to the cooler under pressure for forced or balanced draft operation. These special features necessarily complicate the instrument and control system somewhat.

While a draft or pressure gauge shows resistance, it does not truly reveal the actual flow. Ordinarily one would assume that a kiln with strong draft would have a high flow, but that is not necessarily the case. The flow will be higher, of course, than if the draft was low, but the actual amount depends as much on kiln packing as it does on the draft. For this reason there are two special gauges included in the system which heretofore were never used; differential gauges, not to show the draft, but rather draft drop through a section of constant resistance. In such cases then the drop draft would be indicative as the square of the flow.

Induced Draft System

The top draft connection (1) to the kiln leads to gauge (2) which shows the top draft proper as well as to gauge (3) which is a differential gauge, having its other leg connected

to the kiln at (4). (See Fig. 2)

In the section between (1) and (4) within the kiln, no lime is made; it is still all stone of a fairly constant packing factor and always full of stone, so the varied draft drop across this section is indicative of the volume flow. It is only this section of the kiln between the exhaust offtake and recirculating offtake that can be used for this purpose of volume measurement. The section below the recirculating offtake is unsuitable because flow is greater due to the recycling stream, and also lime being made in this section may be disintegrating and to present varied resistance at different periods.

Top draft is regulated by lever (5) on the board, from which cable leads across pulleys to counterweighted damper (6) in the suction of the exhaust fan. At (7) is the start-stop switch for the exhaust fan. Thus the connections, instrument and control units from (1) to (7) constitute the kiln capacity control system when the kiln is operated under induced draft conditions.

Forced and Balanced Draft

It is possible to operate the kiln under forced draft. In that case the primary air fan would be delivering air to the kiln under pressure, rather than drawing it under suction through the lime draw gates. Forced draft operation control would be by means of damper (8), leading to control lever (9). Motor start-stop control is at (10) and regulation would be in accordance with the indications of the hot zone gauge (11) connected to the kiln at (12). Differential gauge (3) would still indicate the flow through the kiln, but regulation will need to be

in accordance to the hot zone gauge, as only about 1 in. pressure may be allowed within the kiln on the gas inlet level or back pressure on the producer may be excessive.

Thus the arrangement of control from (8) to (12) constitutes the forced draft system, which may be used independently of the induced draft system or in combination with it for a balanced draft effect at the producer gas inlet level.

Hot Zone Temperature Control

When the temperature is too hot or gas distribution too poor for the production of best lime, the recirculating fan is made to withdraw gas from the upper section of the hot zone and reintroduce it into the lower zone.

The recirculating fan, due to the hot gas it handles, is greatly handicapped in operation, so it is not desirable to incorporate any flow measuring orifices into the system. The mass that it handles, however, does fairly closely correspond to the power it requires. Thus regulation of this fan is in accordance with the visual observations of the kiln conditions and by the aid of the ammeter (13) control is accomplished by damper (14) connected to board lever (15). The only occasional necessary distribution rearrangement of recirculating gas between the producer gas and recirculating ducts of the center burner is taken care of by dampers (16) and (17).

If lime is of high calcium rather than dolomitic variety, the gas coming from the recirculating offtake duct of the kiln may be too hot for the fan and so may need to be tempered with cooler gas from the upper fan. This is accomplished by damper (18) connected to board lever (19).

The kiln temperature control system thus consists of units from (13) to (20), the latter being the motor start-stop switch located on the instrument panel. Often kilns are operated without this system; when lime is of the high calcium variety and very pure it is not harmed much by high heat. Then the main advantage, that of better lime, is not so much a factor, but the advantage of better distribution does remain. When limestone is impure, or when it is of dolomitic variety, and particularly if both dolomitic and impure, then the recirculating system becomes quite necessary, although it complicates the installation.

The Gas Producer System

The gas producer is controlled by the damper (21) in the discharge of the producer blower, operated from lever (22) located on the instrument panel. The motor start-stop switch (23) is also on the instrument board. The pressure gauge (24) is connected

to the ash pit at (25). In addition there is a gas pressure gauge (26) connected to the gas duct leading into the kiln at (27).

With wood as a fuel, straight air may be used in the blast; with coal, even the best coal, this would lead to clinkering. To avoid that, some agent, such as steam or CO₂, must be added to the air. Dissociation of either of these, which occurs at high temperatures in the presence of carbon, has a cooling effect on the oxydizing zone of the producer and effectively prevents clinker formation. With this particular arrangement CO₂, obtained from the kiln gas recirculating stream and controlled by damper (28), is injected into the suction connection of the producer blower. This constitutes the ordinary gas producer control system in which all the elements are necessary except possibly the gas pressure gauge, and that is at least desirable.

Ash pit pressure, however, does not necessarily indicate the rate at which the producer is operated. Ashes may be higher or lower and much also can happen to the bed to compact it and so increase the necessary pressure. However, air flow rate into the producer ash pit would be a good indication of the amount of gas passing out of the producer on the way to the kiln. To bring about this suction connection to the producer, the blower was lengthened and an orifice plate (29) inserted. The high and low leads from this run to the differential indicating gauge at (30).

The arrangement is not one suitable for accurate measurements of air flow; the quarters are too crowded to give the suction intake the necessary straight run, but for relative reading it is quite satisfactory.

The elements from (21) to (30) thus constitute the producer control system. If the producer is not of this integral type and of a capacity of about only 15 tons of coal per day, but rather of the large automatic type with a coal consuming capacity of 50 tons, then further controls could justifiably be incorporated. They probably would be for blast control from producer main pressure and coal feed control from variations in gas temperature.

Temperature Measurement

At (31) on the instrument panel is an indicating pyrometer, which if desired may also be of recording type or even a three-point recording type, in which latter case the selector switch at (32) would not be necessary. The instrument is to indicate three temperatures, that of the gas leaving the producer at (33), the gas passing through the recirculating fan at (34), and the kiln exhaust gases at (35). They all are more or less important. Ordinarily, the cooler the producer gas the better the gas as hot

gas indicates infrequent coal charging or holes in the firebed or both.

The recirculating gas temperature should be as hot as the fan is able to stand, 1000 deg. F. if possible, and certainly no lower than 800 deg. F., which is not a particularly high temperature for any fan of suitable air cooled roller or ball bearing arrangement. Still there is a critical point, and for that reason a pyrometer connection is desirable to save the fan.

Knowledge of exhaust gas temperature is less important on kilns of this sort, incorporating stone storage and therefore assuring a ready supply at the rate that the kiln is drawn. On the low kilns, requiring continuous stone charging, it is more important because it immediately reveals likely reasons for low draft; most likely too high temperature caused by stone being low. Whether it is a low or high kiln, as long as it is an induced draft kiln, a knowledge of temperature and of its periodic variations is very desirable.

Gas Analysis

In some plants gas analysis would be a superfluity and offer complications, while in others it is demanded. It would be used far more if arrangements for its use were convenient. In Fig. 2 the Orsat (36) is mounted on the table of the instrument board on which the log also should be kept. Three sampling pipes lead to the instrument panel, one connecting at (37) for the sample to determine CO₂ in the producer blast, the second connected at (38) permits analysis of the recirculating gas which constitutes the kiln gas proper, and the third sample (39) is obtained in the discharge of the kiln exhaust fan, which always is diluted with leakage air entering through the stone charging door, but which by proper interpretation still does reveal considerable information.

Operations involving charging of stone and fuel, and drawing of lime should take place at regular and fairly precise intervals. Thus, the clock (40) also becomes an important instrument worthy of being conspicuously mounted.

Open New Quarry

KASER CONSTRUCTION CO. will open a quarry south of Selma, Iowa, in Van Buren county. The company will supply agricultural limestone and road stone.

Add Gravel Plants

CONCRETE MATERIALS CO., Waterloo, Iowa, announced discontinuance of sand and gravel operations at Humboldt and Estherville, Iowa, and have new plants in service at Des Moines and Clayton, Iowa. Other plants of the company are located at Waterloo, Cedar Rapids, Eddyville, Iowa, and Byron, Ill.

So what about this tire?

IT'S ROUGH!

This FIRESTONE GROUND GRIP TIRE has carried tens of thousands of cubic yards of dirt over the rockiest haul roads to be found in the western Mountain States. No down time has ever been charged against this tire.

IT'S TOUGH!

Those massive tread bars have absorbed the most grueling punishment a tire can be asked to take, have protected the body from blows and cuts. Double thick sidewalls have resisted snagging, cutting and rutwear.

IT'S READY FOR MORE!

This FIRESTONE GROUND GRIP, having already delivered many more hours of service than normally expected on this type of operation, is ready to roll — will carry many more thousands of tons of payload.

GROUND GRIP ROCK GRIP EARTH MOVER

Copyright, 1946, The Firestone Tire & Rubber Co.

Calcining

FUEL ECONOMY With Slurry Dryer

Slurry dryer designed to reduce fuel consumption to 90-lbs. coal per barrel of clinker and cut down dust losses

IN THE ACCOMPANYING ILLUSTRATIONS are shown details of a proposed slurry dryer. The description which follows is presented for discussion and criticism of cement plant operators who are faced with the problem of meeting substantial advances in fuel costs by the installation of equipment which will bring about operating economies.

Slurry Dryer

The slurry dryer is of a box-like construction located above the feed end of the kiln. Inside the dryer there are two pan conveyors, one above the other. Below the conveyors is a scraper or drag-chain conveyor. On the top of the feed end of the dryer is located the slurry feeder and slurry distributor designed to spread the slurry over the entire width of the upper pan conveyor. The pan of the pan conveyor is designed so it will turn as shown in the illustration. The speed of the feeder distributor and pan conveyors can be synchronized with the speed of the kiln by means of a Selsyn device.

*Chief Engineer, The Bessemer Limestone and Cement Company

By HAAVARD KRONSTAD*

The Lepol kiln system used for dry process cement plants uses a traveling grate of heat resisting cast iron carrying the nodules which contain around 14 percent water. The temperatures of the gases entering the grate are 1600 deg. to 1800 deg. F. In the slurry dryer the temperature will be around 1400 deg. F., so it should not be necessary to use the higher cost heat-resisting materials for pan conveyor or lifter at the end of the kiln.

The slurry is dried by the hot gases from the kiln which travel upward into the dryer and preheat the dry slurry falling from the discharge end of the lower pan conveyor. Since the pan of the conveyor extends practically the full width of the dryer, the gases must travel lengthwise above and below the conveyors to reach the outlet for the gases. The hot gases passing through the dryer evaporate the water in the slurry. Also, the dust in the gases will tend to settle out and

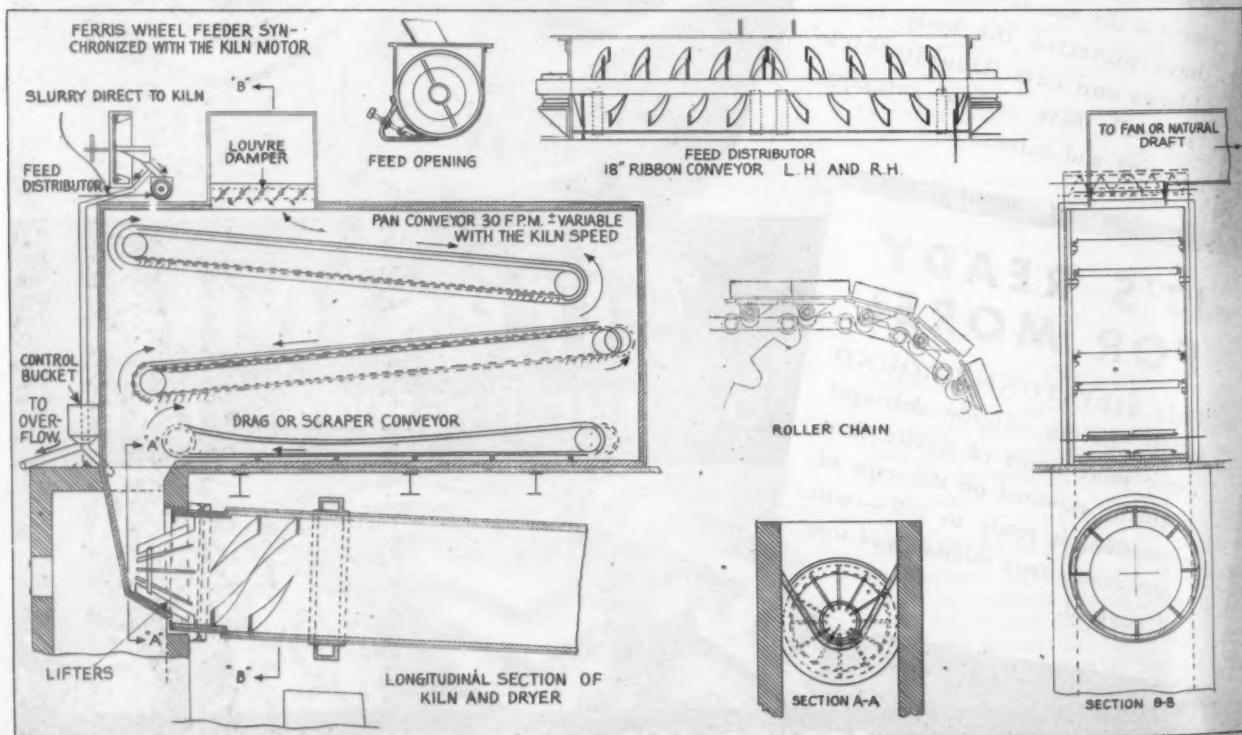
be refed to the kiln, thereby greatly reducing dust losses.

The use of a slurry dryer in conjunction with a wet process cement kiln should result in several important economies. It would be expected that its use would reduce fuel consumption, reduce dust losses and increase production.

In a cement kiln equipped with chain it is common to use 115-lb. of 13,400 B.t.u. coal and 640 lb. of raw material to produce one barrel of clinker. If the temperature at the feed end of the kiln is 900 deg. F. then approximately 340,000 B.t.u. or 25 lb. of coal are lost for each barrel of clinker produced. The temperature of the gases leaving the slurry dryer would be about 350 deg. F. or 550 deg. F. less than the temperature of exit gases without the slurry dryer. This reduction in temperatures, together with increase in production resulting from the adding of dry raw materials to the kiln, is estimated to reduce the fuel consumption from 115 lb. of coal per barrel of clinker to about 90 lb.

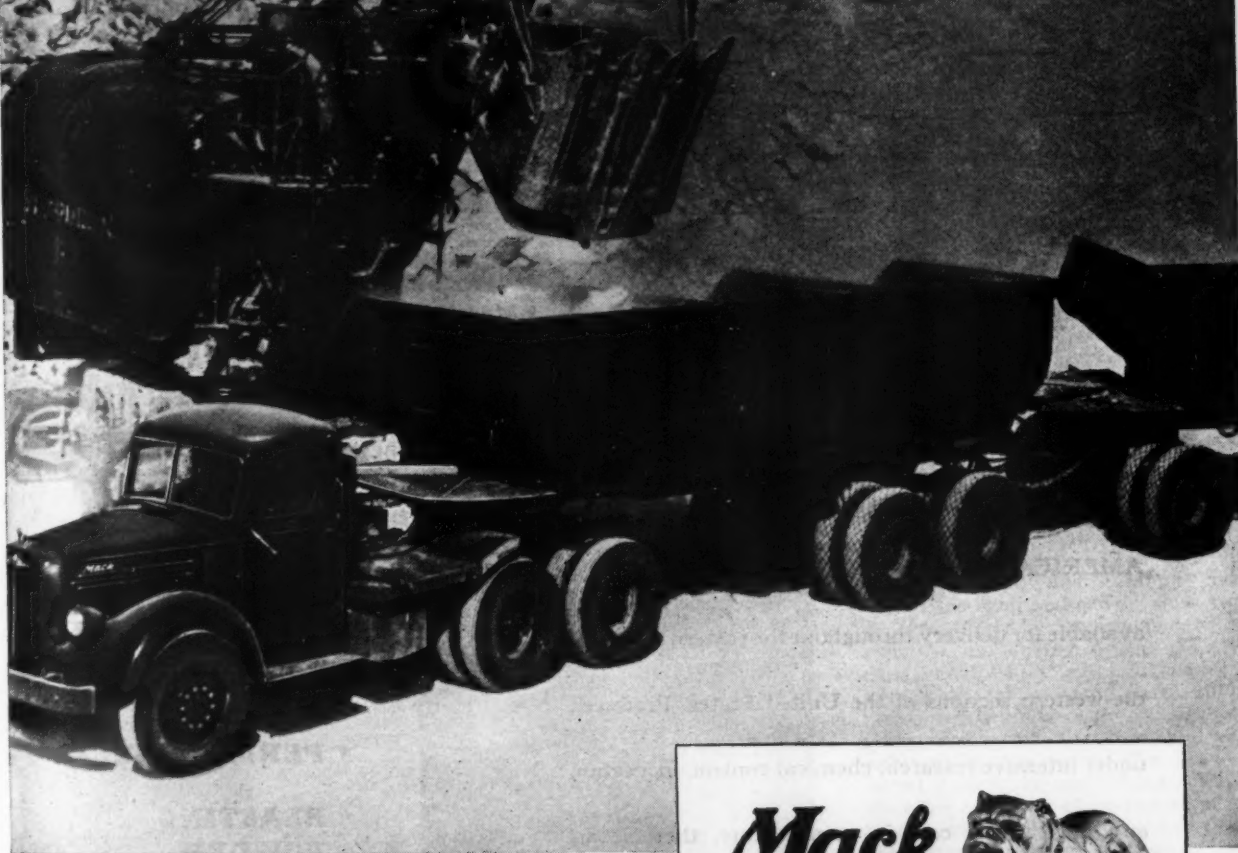
An estimate of the quantity of heat

(Continued on page 102)



Details of slurry dryer installation utilizing kiln waste heat gases

How to move a lot of rock in a little time...



• • • Southwestern Portland Cement Co., Victorsville, California does it by using two Mack six-wheelers. As Southwestern puts it, "Since 1941, these trucks have run in excess of 400,000 miles over rough quarry roads, giving excellent satisfaction. Bogies have proved most successful, needing practically no repair at last inspection." The company has backed up these words with an order for three more LMSW-M Models.

That's the way the Mack balanced bogie and the exclusive Mack Power Divider handle any job. No bogie hopping, unequal tire wear, or hard steering. Torque reaction is balanced out, eliminating weight transfer and assuring equal traction on all wheels.

Figure mileage and performance such as this in terms of your job. The same reliable, efficient service will mean extra profits through lower operating costs. Plan a Mack in your operation.

Mack

TRUCKS

FOR EVERY PURPOSE



PERFORMANCE COUNTS!

Mack Trucks, Inc., Empire State Bldg.,
New York, N. Y. Factories at Allentown,
Pa.; Plainfield, N. J.; New Brunswick,
N. J.; Long Island City, N. Y. Factory
branches and dealers in all principal
cities including Toronto and Montreal,
Canada.

Available-



• Magazines
* Plants

AMERICAN EXPLOSIVES

From well-located plants and distributing magazines, AMERICAN explosives and blasting supplies are available for delivery throughout the eastern and middle-western sections of the United States. Produced under intensive research, chemical control, inspection and unremitting care in manufacture, there is an AMERICAN explosive suited to your requirement.

• Capable field engineers are available at your call.

★ HIGH EXPLOSIVES

★ PERMISSIBLES

★ BLASTING
POWDER

★ BLASTING
ACCESSORIES

American Cyanamid Company



EXPLOSIVES DEPARTMENT
30 ROCKEFELLER PLAZA • NEW YORK, N. Y.

SALES OFFICES: PITTSBURGH, Pa. Bluefield, West Va. Scranton, Pa. Chicago, Ill.
Pottsville, Pa. Maynard, Mass.

OPERATING TRENDS

(Continued from page 31)

1000 t.p.d. Side- and bottom-discharge chutes serve trucks and cars.

Although the previously described operations have all been of the permanent plant variety, there are a great number of portable plants in Minnesota, capable of moving to almost any location and working excellent deposits. Typical of these portable plants is the one that was located at Hastings at the time of the writer's visit to Minnesota. This plant was set up to produce aggregates for the widening of the locks at the Hastings Dam and Locks.

The deposit selected contained about 70 percent gravel, of which about 20 percent was above 2-in. and 15 percent above 3-in., necessitating reduction before final sizing. The deposit, or any other deposit for which the plant is set up, is excavated by shovel. Trucks transport material to the plant where it is discharged into a 10-cu. yd. steel hopper, constructed of No. 8 plate steel, reinforced with angle irons. Above the hopper is a grizzly spaced at 8- x 18-in. to prevent boulders from entering the hopper. These are sledged and reduced to a size that will permit entrance through the grizzly.

An automatic feeder under the hopper delivers the product to a 30-in. belt conveyor, 100 ft. centers, set at a rise of 3½-in. to one foot. The conveyor discharges into a feed box that concentrates the load to a 4- x 12-ft. triple-deck Simplicity vibrating screen with 2-in. sq. openings on the first 8-ft. of the top deck, and 3-in. on



View of quarry operated by Landers, Norblom, Christenson Co., Minneapolis, which is worked in two 14-ft. lifts. Stone is transported to plant in side dump cars pulled over narrow-gauge track by locomotive

the lower 4-ft. The middle deck has ¾-in. sq. openings for the first 8-ft. and a blank for the remaining 4-ft. while the lower deck is equipped with 5/32- x ½-in. openings. This particular system of screen arrangement is, of course, made for the type of material required for this job.

The oversize retained on the upper deck is chuted directly into a 15- x 36-in. Diamond jaw crusher superimposed on steel I-beams forming a platform for this crusher and another crusher that can be installed when needed. The platform rides on four double-tired wheels for portability. Crusher throughs return to the screen in closed-circuit and everything passing the upper deck is transferred by belt conveyor to a 4- x 12-ft. triple-deck Stephens - Adamson vibrating

screen. The three products retained on the decks are chuted to three separate bins and the minus ¾-in. is chuted by pipe to a stockpile.

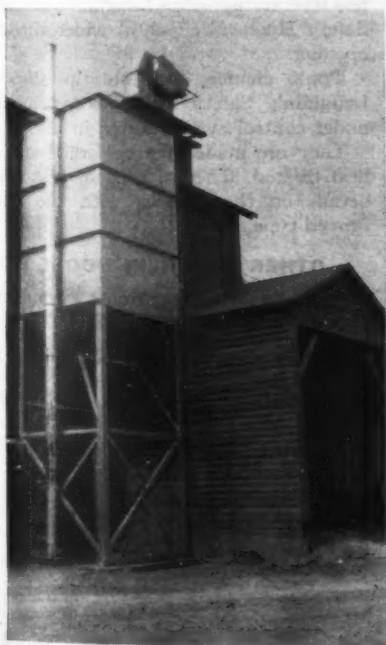
Sand separated from the gravel at the first screening station is collected in a 6- x 30-ft. sand drag. The paddles in the drag are 5-ft. long and spaced about 1-ft. centers. The size of the tank enables recovery of a finer product than would be possible with a smaller tank since it has a greater settling area. From the drag, sand is elevated to a bin by belt conveyor.

Wash water is added at both screens by a 10-in. Morris pump, each screen receiving about 1200 g.p.m. Plant capacity is about 1400-cu. yd. in 8-hrs. The average for the first 100 hours that the plant was in operation was 175-cu. yd. per hr.

Hedberg - Freidheim and Co., St. Louis Park, is operating a sand and gravel plant in conjunction with a ready mixed concrete and concrete products plant, and recently purchased the sand and gravel plant formerly operated by Consolidated Materials Co. in Hopkins. At the plant in St. Louis Park, a long belt conveyor system of transportation from pit to plant is featured, with the conveyor going under the four-lane highway adjacent to the plant. The conventional system of excavating with a slackline cableway and scraper bucket is also employed here. Total length of the conveyor system, employing two transfer stations, is about 1100-ft.

The product is scalped in a trommel screen, oversize going to an 8-in. Superior McCully gyratory crusher for reduction and joining the throughs on another belt for delivery to a second trommel screen where plus 1¼-in. gravel is recrushed in an Allis-Chalmers gyratory crusher. Delivered by belt conveyor, the minus 1¼-in. material is screened in a third trommel screen equipped with a scrubber section. Sand is collected in four Link-Belt cones, and gravel for coarse aggregate is cleaned in a screw washer where shale is floated away to waste.

(Continued on page 38)



Left: Dust plant of Landers, Norblom, Christenson Co., with steel storage bin to the left. Right: Minus 200-mesh limestone dust is ground in this pulverizer with provisions for drying with hot air introduced into the mill by fan



DUAL IMPACT BRINGS 'EM DOWN FASTER

Concentrated, double, striking power and precision balance is the success secret of the New Holland Model 3030. Greater impact action from dual impellers gives you High Production at Low Cost.

Rotating in opposite directions, massive twin impellers reduce run-of-the-quarry stone to any desired size at a rate of 75 to 150 tons per hour. Two-ton impellers are so finely balanced they can be rotated by finger-tip touch . . . 75 to 150 H.P. revolves them at speeds of 250 to 1000 R.P.M. Equally suitable for gravel or quarry operation, the New Holland 3030 excels in "traffic-bound" stone production. Fits any closed circuit plant.

NEW HOLLAND MANUFACTURING CO.
MOUNTVILLE, PENNSYLVANIA
Subsidiary of New Holland Machine Co.



No. 3030 OPERATING
IN McKEE QUARRY,
ARCHIE, MISSOURI

Write Dept. A-10
today for full details



Operating Trends

C. continued from page 97

Production capacity is about 100-cu. yds. per hour.

The recently-purchased plant at Hopkins features a radial system of storage. The product from the deposit is received in a hopper and fed by a Telsmith reciprocating feeder to a belt conveyor for delivery to a revolving screen. In advance of this screen is a steel rail grizzly with 4-in. spacing. Oversize from the grizzly, plus 4-in., is reduced in a Telsmith gyratory crusher while oversize from the revolving screen is sent to another Telsmith crusher. The crushed product returns to the belt feeding the plant in closed circuit, while the throughs from the scalping screen are elevated to two rotary sizing screens. The two screens are mounted on a platform about 50-ft. above ground level. Under the screens are two No. 6 and two No. 7 Telsmith sand cones for collection of sand. Sized gravel and sand is chuted to the ground where it is stored in the Kern system of radial storage. Under the center of the storage area is a reclaiming belt on which any specified blend can be made through the proper opening of the discharge gates from the seven divisions of the radial storage. The belt conveyor feeds the product to railroad cars or to steel storage bins. Before delivery to cars, the material is given a rinsing as it passes over screens at the loading tippie. Constructed in 1931, the plant was built of reinforced concrete and steel by the Fred T. Kern Co.

Screw Classifiers for Sand

J. L. Shiely Co., St. Paul, has been producing sand and gravel since 1924 at a plant just five miles from downtown St. Paul. Recent improvements to the plant have increased production capacity from 125- to 200-cu. yds. per hour.

The deposit, across a main thoroughfare from the plant, consists of about 67 percent sand and occurs in a stratum about 30-ft. in depth. Three 10-cu. yd. Euclids transport material from the pit to a hopper at the plant, replacing the former narrow-gauge track system. Trucks discharge the load through a grizzly, spaced at 6-in., to a hopper equipped with a reciprocating feeder. Sand and gravel is fed to a belt conveyor that moves it across railroad tracks and discharges to another belt conveyor through a transfer station. This conveyor discharges to a revolving scalping screen with 3-in. round openings. Oversize is crushed in a 6-in. Superior McCully fine reduction crusher. Crushed gravel and the minus 3-in. product are conveyed to a similar trommel screen with 1½-in. round openings where the oversize is scalped off into a 4-ft. Symons cone. The crushed gravel and the minus 1½-in. material are conveyed to a 5- x 10-ft. scrubber where clay is broken up. Discharge from the

A HOOK *that* CAN'T LOSE ITS LOAD



The newly-designed latch (with stainless steel spring) gives Laughlin's unique Safety Hook a 25%-40% wider throat opening.

Don't chance accidents up above. Laughlin's Safety Hook keeps loads under control even if jolted in mid-air.

They are made of drop-forged steel, heat-treated. They're rugged. Get the details on these hooks with the improved type of latch.

OTHER LAUGHLIN HOOKS

Laughlin offers the most complete line of hooks, including grab hooks, hoist hooks, cargo hooks and other types, all heat-treated, drop-forged and weldless.

Distributed through mill, mine and oil field supply houses. For catalog, write Dept. 4, The Thomas Laughlin Company, Portland 6, Me.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



scrubber is to two 4- x 10-ft. triple-deck Link-Belt screens. The $\frac{1}{4}$ - to $\frac{1}{2}$ -in. product is rescreened on a pair of 4- x 10-ft. double-deck Robins Gyrex screens. Sized gravel is stored in bins while sand passing the lower deck of the two screens discharges to a pair of Akins classifiers, with 60-in. diameter screws, 26-ft. 9-in. long. Sand passing one screen (equipped with $\frac{1}{4}$ -in. sq. openings on the bottom deck) goes to one classifier and sand passing the bottom deck of the other screen (minus $\frac{1}{2}$ -in.) goes to the other classifier. Thus concrete sand is reclaimed from one of the classifiers and asphalt sand or masons' sand from the other. The sand discharges to bins that have side-discharge gates for feed to a belt conveyor system that removes sand to stockpiles. The belt from the bins discharges to another belt that has a turnhead at the discharge end to send coarse sand to a stockpile or to send fine sand to another belt for discharge to a fine sand stockpile. A complete story on this operation and the changes made during the past year will appear in an early issue of ROCK PRODUCTS.

One of the largest producers of sand and gravel in Minnesota is the Industrial Aggregates Co. at Minneapolis, where the normal 10-hour day production capacity is 4000 tons. Two separate deposits are worked, one employing truck haulage and the other track haulage. Both deposit excavations are about 60-ft. deep and contain from 30- to 40-percent gravel.

Stone Plants

CONSTRUCTED in 1942 to provide aggregate for the Gopher Ordnance Works at Rosemount, Minn., the crushed stone plant of J. L. Shiely Co. at Mendota is now producing concrete aggregate and other types of commercial stone at a rate of 100 tons per hour. The limestone deposit occurs in a stratum varying from 8- to 14-ft. in thickness with a slight overburden. Stripping is done by a Model 35 Marion shovel with a $1\frac{1}{4}$ -cu. yd. bucket that loads trucks for disposal. Stone, loaded to 4-cu. yd. side-discharge cars operating over 36-in. gauge track, is moved to the plant by a $7\frac{1}{2}$ -ton Whitcomb locomotive.

At the plant, the cars are dumped by an air-hoist to a 20-in. Superior McCully crusher. The crusher product is elevated by belt conveyor to a 4- x 16-ft. Link-Belt trommel screen with $1\frac{1}{2}$ -in. and $2\frac{1}{4}$ -in. round openings. Oversize is reduced in a 10-in. Newhouse gyratory crusher and returned to the trommel screen in closed circuit. Stone retained on the $1\frac{1}{2}$ -in. forward section of the screen and passing the $2\frac{1}{4}$ -in. lower section is crushed in a 3-ft. Symons horizontal disc crusher and returned to the trommel in closed circuit. Minus $1\frac{1}{2}$ -in.

(Continued on page 101)



YOUR EAGLE WASHER IS

✓ *Correctly engineered*
✓ *Built for your Specific Conditions*

Before Eagle quotes on a washer, our engineers prefer to make comprehensive tests with the material to be handled. Knowing the daily tonnage and other essential operating factors, they are able to suggest a unit which will not only meet your specification needs, but will also substantially reduce your processing costs.

The experience of over 70 years in building sand and gravel equipment is exhibited in Eagle Washer design and construction. Eagle was among the first to recognize that no one

washer design meets all requirements. Accordingly our engineers are always ready to work with sand and gravel producers on their individual problems and to make recommendations on the proper size and type of unit to be used.

All Eagle Washers provide these important advantages:

Wash water is introduced through correctly spaced inlets in the bottom of the tub.

Water flows in a rising current, with uniform action that thoroughly removes foreign material.

Interchangeable flights; readily replaced or changed from screws to paddles — or vice versa.

Two Timken roller thrust bearings in housing at upper end of the tub take all the end thrust of the conveyor shaft.

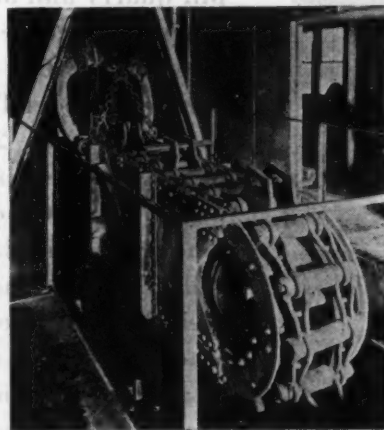
The marine type bearing developed for the wet end of shaft has proved superior to all other designs.

Flights are cast from special analysis semi-steel, chilled on the wearing surface to a hardness of 600 Brinell.

The bevel drive gear and pinion are precision cut, insuring easy running and efficient power transmission.

Trouble free operation and low maintenance are built into Eagle Washers by these features. Send for Bulletin No. 46 for added details.

EAGLE IRON WORKS
137 Holcomb Ave.
Des Moines, Iowa



The Eagle "Swintek" Dredging Ladder makes profitable dredging of deep sand and gravel deposits. The cutters loosen deposit and assure uniform feed of solids. Chain is correctly designed to exclude oversize from nozzle. Details in Catalog No. 745.

EAGLE Specialized Sand and Gravel Equipment
"SWINTEK" DREDGE LADDERS — SCREW WASHERS
LOG WASHERS — DEHYDRATORS — SAND TANKS
CLASSIFIERS — REVOLVING SCREENS
EAGLE IRON WORKS
DES MOINES, IOWA

"SERVING INDUSTRY FOR OVER SEVENTY YEARS"



**When there's
WORK
to do..**

TRAXCAVATE!



Work is the word for TRAXCAVATORS! In the pit, quarry and around the plant, these multi-purpose machines are never idle. Some samples of TRAXCAVATOR versatility are pictured here:—a Model T7 loading 160 tons of quarry rock per hour, 20 hours per day; one IT4 digging and feeding material to a portable plant producing 700 cubic yards of gravel in an 8-hour day; another IT4 stripping 6 feet of top soil. Other extensive uses for TRAXCAVATORS include loading of blasted rock from the pit, stockpile work, maintaining haulage roads, clean-up, etc. Your TRACKSON—"Caterpillar" dealer can show you how TRAXCAVATORS will save time and money, and increase production for you. See him today, or write direct to **TRACKSON COMPANY, Dept. RP-116, Milwaukee 1, Wisconsin.**



**DIGS
GRADES**

TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR



**LOADS
CARRIES**

Operating Trends

(Continued from page 99)

stone is elevated by belt conveyor to a 5- x 14-ft. double-deck Robins Gyrex screen with $\frac{3}{4}$ - and $\frac{1}{2}$ -in. sq. openings on the two decks, respectively. The product retained on both decks is split to two 4- x 10-ft. double-deck Link-Belt screens for final sizing, while the minus $\frac{1}{2}$ -in. stone drops directly to a bin as agstone or concrete block aggregate.

The two Link-Belt screens are equipped with $\frac{3}{4}$ - and $\frac{1}{2}$ -in. sq. openings. The $\frac{1}{2}$ - to $\frac{3}{4}$ -in. product is sent to storage, and the minus $\frac{1}{2}$ -in. stone also goes to the agstone bin. Plus $\frac{3}{4}$ -in. stone is conveyed by a pair of belt conveyors from the two screens to another pair of 4- x 10-ft. double-deck Link-Belt screens with $1\frac{1}{2}$ - and $\frac{3}{4}$ -in. sq. openings on the two decks, respectively. The sized stone is sent to bins as finished products.

There are five bins, each with a capacity of 200 tons, with bottom and side discharge. Under the bins is a blending belt on which specification stone can be conveyed to another belt conveyor that loads cars on the adjacent siding. This same blending belt also feeds a truck loading belt.

At St. Cloud, the Shiely-Pettters Crushed Stone Co. is producing railroad ballast and commercial stone from granite tailings left at the site of a former dimension stone plant. Many million tons of these tailings, scattered over the area in piles as high as 75-ft., are available for processing.

Pieces above $1\frac{1}{2}$ -cu. yd. in size are drilled and broken with wedges or are blasted. The stone is delivered to the plant in 6-cu. yd. Koehring Dumpsters that discharge from a ramp to a 5- x 17-ft. apron feeder. Stone is fed into a 42-in. Superior McCully gyratory crusher set at 6-in. opening. Above the crusher is a travelling gantry with a hook for removal of large pieces that might jam and stop the crusher. Crushed granite is delivered by belt conveyor to a 5- x 10-ft. Link-Belt single-deck scalping screen with $2\frac{1}{2}$ -in. sq. openings.

Oversize is recrushed in a 16-in. and a 20-in. Allis-Chalmers gyratory crusher. Minus $2\frac{1}{2}$ -in. stone and crusher throughs are conveyed by belt conveyor to a feed box above a pair of 4- x 12-ft. double-deck Stephens-Adamson vibrating screens with 2- and $\frac{3}{4}$ -in. sq. openings on the upper and lower decks, respectively. Plus 2-in. material is recrushed in a 14-in. Allis-Chalmers gyratory crusher and returns to the screens in closed circuit. The $\frac{3}{4}$ - to 2-in. ballast is elevated by belt conveyor to a discharge point above a large stockpile. Minus $\frac{3}{4}$ -in. stone is delivered by belt conveyor to a 4- x 12-ft. triple-deck Seco screen with $5/16$ -in. sq. openings on the upper deck and 10- and 20-mesh on the two lower decks. The products retained on the three decks are sized aggregates, and the minus 20-mesh is

pipled to waste together with the wash water that is added at the screen.

Under the ballast stockpile is a reclaiming tunnel housing a belt conveyor that delivers the stone to a loading dock at the railroad spur.

The plant was placed in operation in June, 1945 and expects to supply a minimum of 100,000 cu. yd. per year for the next ten years to the railroads. Plant capacity is about 200 tons per hour.

Landers, Norblom, Christenson has operated a crushed limestone plant in Minneapolis for about 40 years, processing the stone into commercial sizes and during recent years has operated a plant for production of minus 200-mesh material for asphalt filler and meal.

The deposit consists of two 14-ft. strata, the lower of which is more suitable for concrete aggregate due to an absence of clay. The upper stratum contains clay streaks that do not permit processing into concrete stone. Quarry haulage is handled by Austin-Western side-discharge cars of 7-ton capacity, pulled by an 8-ton Plymouth locomotive. Cars discharge to a 30-in. Superior McCully gyratory crusher, and the crushed stone is delivered by bucket elevator to a 4- x 14-ft. double-deck Diamond vibrating screen. The upper and lower decks are equipped with $1\frac{1}{2}$ - and $\frac{1}{4}$ -in. sq. openings, respectively. Oversize is chuted to a 22- x 40-in. Pioneer corrugated roll crusher, and minus $1\frac{1}{2}$ - to $\frac{1}{4}$ -in. drops to the boot of a bucket elevator where it is joined by the crusher throughs. Minus $\frac{1}{4}$ -in. stone is stored in a bin.

The bucket elevator discharges over a 3- x 10-ft. double-deck Tyler Niagara screen with $1\frac{1}{4}$ - and $\frac{1}{4}$ -in. sq. openings on the two decks, respectively. Oversize is recrushed in a 22- x 40-in. Pioneer smooth-roll crusher, the recrushed product returning to the bucket elevator in closed circuit. The minus $\frac{1}{4}$ -in. stone is sent to a bin while the $\frac{1}{4}$ - to $1\frac{1}{4}$ -in. stone is re-screened on a 3- x 10-ft. triple-deck Tyler screen. This screen has $1\frac{1}{4}$ -, $\frac{3}{4}$ -, and $7/16$ -in. sq. openings on the three decks, respectively, and the four sizes produced are stored in bins. Total capacity of the eight bins is about 550 tons.

Stone from the bins is hauled by truck to the "dust mill," the minus $7/16$ -in. size being normally used. Trucks discharge to a hopper that feeds an enclosed bucket elevator delivering the stone to two 45-ton capacity bins. These two bins have gravity flow to an automatic feeder that sends the stone into an R. C. type Williams pulverizer with a capacity of 7 t.p.h. A 48-in. fan blows the minus 200-mesh product into an air separator that feeds a Multiclone equipped with a spout for bagging the asphalt filler. This plant is also equipped with two $32\frac{1}{2}$ -ton capacity storage tanks fed by screw conveyor and bucket elevator from the Multi-



*For HARDFACING all wearing equipment where Impact and Abrasion are involved.

NEW EXTRUDED COATING

brings improved properties to **STOODY SELF-HARDENING***

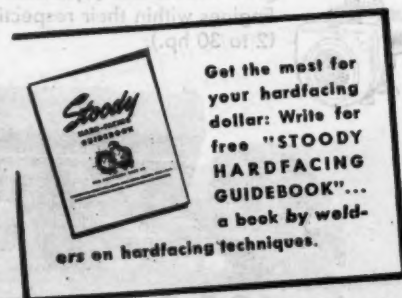
Your old favorite, **STOODY SELF-HARDENING**, is all decked out in a new improved coating! Extruded hydraulically instead of being dipped, the new coating is much stronger, resists moisture pickup and maintains complete uniformity!

You'll notice faster welding, freedom from porosity, denser deposits. Welds with either AC or DC machines in any bead type!

FORGET YOUR SCALING DIFFICULTIES!

Slag comes off easily while deposits are still hot — is self-lifting as deposits cool. Same high wear resistance as old dipped electrodes, no loss in hardness even on multiple deposits!

For many years the favorite for maximum wear protection — Stoody Self-Hardening is now improved for maximum ease of welding. Try 50 lbs. today and note the advantages! No change in price. New circulars available — see any of our 600 Stoody dealers!



Get the most for your hardfacing dollar: Write for free "STOODY HARDFACING GUIDEBOOK"... a book by welders on hardfacing techniques.

STOODY COMPANY

1129 W. SLAUSON AVE., WHITTIER, CALIF.

STOODY HARD-FACING ALLOYS

Retard Wear Save Repair



Sauerman Slackline Cableway above lifts gravel from wide pit and delivers 110 cu. yd. an hour to plant at cost of few cents a yard.



Sauerman Scraper setup with elevated tail bridge stockpiles two sizes of rock at crushing plant.

TIME TESTED

Sauerman Machines Have a Long Record of Success in Rock Products Field

More than thirty-five years of giving satisfaction at rock products plants is the proud record of Sauerman Slackline Cableways and Power Scrapers. An increasing number of these machines have been put to work this year moving materials from pits, banks and rivers, handling stockpiles, stripping, etc. The popularity of Sauerman machines is at a new high throughout the industry.

Sauerman machines dig, haul and dump in a continuous cycle. The operator has easy control of the entire operation. Power demand is moderate. Repairs are few and simple.

Tell us about your excavating and stockpiling problems. We will send you our catalog and suggestions of our engineers for your consideration.

SAUERMAN BROS., INC.

530 S. Clinton St.

Power Scrapers & Cableways
SINCE 1909

Chicago 7, Ill.

UNLOADING JOB By WISCONSIN Air-Cooled ENGINE

This 100 Bbls. capacity bulk materials transport, operating within the road laws of the State of Michigan, employs a Wisconsin Heavy-Duty Air-Cooled Engine for operating the spiral unloading conveyor, at a discharge rate of 5 to 7 barrels per minute. In this operation the engine must



overcome a difficult initial starting load, due to cement packing at the conveyor.

This is just another typical construction service job that calls for rugged, heavy-duty serviceability from the power unit . . . supplied in generous measure by all Wisconsin Air-Cooled Engines within their respective power ratings (2 to 30 hp.).



Most H.P. per pound



WISCONSIN MOTOR

Corporation

MILWAUKEE 14, WISCONSIN, U. S. A.

World's Largest Builders of Heavy-Duty Air-Cooled Engines

clone. The screw conveyor also feeds trucks outside the building for bulk delivery.

Capacity of the entire plant is about 1000 tons per day.

Zenith Dredge Co., Quarry Division, operates a crushed trap rock plant at Duluth, purchased about two years ago from the Duluth Crushed Stone Co. The principal product is ballast for railroads, although a fairly large amount of concrete aggregate is also produced.

The rock, received by truck from the quarry, is crushed in a pair of cone crushers and elevated to a pair of rotary screens by belt conveyor. Plus 2½-in. rock is chuted to a box that has three openings for discharge to three No. 7½ N Allis-Chalmers gyratory crushers. The crushed product and the minus 2½-in. rock are conveyed to final crushing operations by belt conveyor. Minus ¼-in. stone is carried to waste by belt conveyor, since it cannot satisfactorily be separated from the clay that accompanies the rock from the quarry.

Discharge from the belt conveyor goes through a split discharge to a pair of 5- x 12-ft. triple-deck Allis-Chalmers Ripl-Flo screens where the product receives final sizing. Oversize, carried by belt conveyor, is recrushed in a 3-ft. Symons cone, the crushed product returning to the screens in closed circuit. The sized products are stored in eight bins with a capacity of 100-tons each.

Slurry Dryer

(Continued from page 94)

available to dry the slurry can readily be made and is of particular interest. If a wet process kiln equipped with chain produces 1800 bbl. of clinker per day, using 115 lb. of coal per barrel, it can be assumed that the same kiln could produce 2000 bbl. per day using not more than 90 lb. of coal per barrel when the raw materials are added dry. The temperatures of the exit gases then would be about 1400 deg. F. and about 1300 lb. of gases for each barrel of clinker would be produced. Since it is estimated that the gases leaving the slurry dryer would be about 350 deg. F., there would be available for drying the slurry (and radiation losses) about 348,000 B.t.u. for each barrel of clinker produced. This quantity of heat is about 10 percent in excess of that required to evaporate the water contained in the slurry (33 percent water content) for each barrel of clinker. A coal consumption of 125 lb. for a wet process cement kiln without chain is usual so the saving will be greater.

The use of the slurry dryer would be expected to reduce dust losses materially. In a wet process kiln the quantity of gases produced is about 2000 lb. per minute for a production rate of 1800 bbl. per day and with a coal consumption of about 115 lb. per barrel using 640 lb. of raw materials. At 900 deg. F. the volume of this gas

would be about 68,000 cu. ft., having a velocity of about 1000 f.p.m. at the upper end (near the retaining ring) of a 10-ft. diameter kiln. The retaining ring and the feed pipe extending downward reduces the outlet from the kiln so that the velocity of the gases leaving the kiln would be about 3000 f.p.m.

Since floating dust can be made to float in an air current traveling 150 f.p.m. and dust can be brought into suspension by air traveling 4000 f.p.m., it is clear that a considerable amount of dust will be carried into the dust chamber. It is estimated that the velocity of gases leaving the slurry dryer would be about 800 f.p.m. The reduction in dust losses due to the use of the slurry dryer would therefore be expected to be appreciable.

Raw Mix Blending

(Continued from page 87)

the problem; 9.7 in. volume of limestone required.

Solving this problem by means of formula, $Y = \frac{72 \times 2}{15} = 9.6$

PROBLEM 2—

A volume of 72 in. slurry, containing 42.1% CaO is to be mixed with limestone 51.6% CaO so as to raise it to the desired percentage of 43.2 CaO. Calculate the volume of limestone required. (This problem is the same as No. 1 but expressed in terms of CaO).

SOLUTION—

$$(H-D) = (51.6-43.2) = 8.4$$

$$(D-L) = (43.2-42.1) = 1.1$$

Using 84 and 11 as coordinates we get point *N* which lies exactly on the line *OE*, and therefore the answer is the same as in problem No. 1.

PROBLEM 3—

In case that we have the same percentage composition and desired purity as in problem 1 and 2, but we desire a given quantity of mixture (140 in.), calculate volumes of limestone and low slurry to be mixed.

SOLUTION—

As in the previous problems, the percentages being the same, the line *OE* represent the equation. From 140 on the *X* axis, draw line 140—*R*, making an angle of 45 deg. The perpendicular line dropped from *R* determines on *X* and *Y* the required volumes of limestone (16.7 in) and low slurry (123.3 in). The remaining possibility of determining volume of low slurry to be mixed with a fixed volume of limestone is easily done, determining the intersection of horizontal line at (*D—L*) with line *OE*.

In practice it is not necessary to use a graph paper for each problem, placing a glass cover on the paper it is possible to mark point *E* on the glass with a slight ink spot, and by means of a ruler the line *OE* and its intersection *I* are easily located.

AVAILABLE...AN UNTIRING WORKER THAT WILL MAKE MONEY FOR ANY OPERATOR

Application for Employment

Name

Seco Vibrating Screen

Age

BRAND NEW—Has hundreds of famous brothers working in various parts of the country. Some have been on the job as long as ten years.

Work Wanted

Looking for the opportunity to increase results on all types of screening—crushed stone, concrete block aggregates, slag, ag. lime, sand and gravel.

Experience

Comes from the SECO FAMILY of vibrating screens—famous for smooth operation year after year. The only screens with positively controlled true circular action which eliminates bobbing—weaving and puts every inch of screen to work!

References

Members of SECO family of vibrating screens now employed and delivering dependable service for operators coast to coast.

Write Today
for Complete Information!
SCREEN EQUIPMENT COMPANY, Inc.

9 LAFAYETTE AVENUE

BUFFALO 13, NEW YORK

Write for your copy of the

KNOX

Valve-Coupler-Nipples-Clamp-Headings

CATALOG



KNOX MANUFACTURING CO.
818 Cherry St. Phila. 7, Pa., U.S.A.
SINCE 1911 PRODUCERS OF

KNOX

Valve-Coupler-Nipples-Clamp-Headings

FINANCIAL

RECENT DIVIDENDS

Canada Crushed Stone Co.	\$.10	Sept. 20
Pennsylvania Glass Sand Corp.	.25	Oct. 1
Pennsylvania Glass Sand Corp. pfd.	1.25	Oct. 1
Superior Portland Cement Co.	.50	July 22

CONSUMERS Co., Chicago, Ill., has called for redemption on November 7, all 67,792 shares of preferred stock at \$57.50 a share plus \$4.84 in accrued and unpaid dividends and a final dividend of 50c payable on the redemption date. Funds for the redemption were provided by a \$3,000,000 loan from the First National Bank of Chicago and \$1,200,000 of company funds.

BLUE DIAMOND CORPORATION, Los Angeles, Calif., reported net profit of \$388,272, after all charges, for the first six months of 1946 as compared with \$93,262 for a like period in 1945. Sales for the first six months of 1946 were \$3,621,023 as against \$2,570,252 for the first half of 1945. President W. J. Van Valkenburgh has announced that a bank loan of \$1,000,000 has been made available to the company for expansion of facilities at its plaster and gypsum lath plant in Nevada.

CALAVERAS CEMENT Co., San Francisco, Calif., has filed with SEC a capital adjustment plan calling for issuance of cumulative income 4½ percent debentures and a new class of prior preference stock. The company will offer, after approval of stockholders, \$90 face amount of 4½ percent cumulative income debentures and one share of new 5 percent prior preference stock, \$60 par value, for each share of the present 7 percent cumulative, \$100 par, preferred stock, on which accumulated dividends amount to \$796,647, or \$49.75 a share.

POTASH Co. OF AMERICA, Los Angeles, Calif., has reported net income of \$2,021,978 for the year ended June 30, 1946 as compared with \$1,817,651 for the year ended June 30, 1945. Sales for the 12 months ended June 30, 1946 were \$13,126,557 as against \$12,693,661 for the 12 months ended June 30, 1945.

PENNSYLVANIA GLASS SAND CORPORATION, Lewistown, Penn., showed a net profit of \$465,466 for the six months ended June 30, 1946. This compares with \$263,346 for the six months ended June 30, 1945.

CANADA CEMENT Co., LTD., Montreal, Canada, announced that stockholders have approved a five-for-one split-up in preferred stock. President J. D. Johnson said that \$8,500,000 balance of outstanding bonds will be called for redemption on November 2

(Continued on page 106)

RYERSON

STEEL

IN STOCK

Call Ryerson when you need steel — any kind, shape, or size. Large stocks are available at eleven convenient plants. Ask for a Ryerson Stock List—your guide to quick shipment of steel.

Principal Products Include:

Bars • Plates • Sheets • Structural
Inland 4-Way Floor Plate • Mechanical Tubing
Boiler Tubes • Hi-Bond Reinforcing Bars
Allegheny Stainless • Alloy Steels • Tool
Steel • Babbitt Metal • Wire • Chain
Bolts • Rivets, Etc.

JOSEPH T. RYERSON & SON, Inc.

Steel-Service Plants at:

CHICAGO, MILWAUKEE, DETROIT, ST. LOUIS,
PHILADELPHIA, CLEVELAND, PITTSBURGH,
CINCINNATI, BUFFALO, NEW YORK, BOSTON

New York Stone Outing

A VERY SUCCESSFUL OUTING was held by the New York State Crushed Stone Association, Inc., on September 25, with 140 in attendance, including many State officials as guests. The general committee in charge of the outing was Wilson P. Foss, Jr., Clarence A. Munz and J. Reid Callanan, chairman. The main sports event included a golf team match between members of the association, captained by Wilson P. Foss, Jr., and officials of the New York Public Works Department, captained by Harvey O. Schermerhorn.

Permanente Adds Capacity

PERMANENTE CEMENT Co., Oakland, Calif., has started construction at its Los Altos cement plant which will increase capacity 500,000 bbls. to 5,500,000 bbls. Equipment includes Fuller coolers on four 465-ft. kilns, an additional raw mill, more clinker crushers, and a third slurry storage tank, the total cost being estimated at \$1,000,000.

Cement Plant Fire

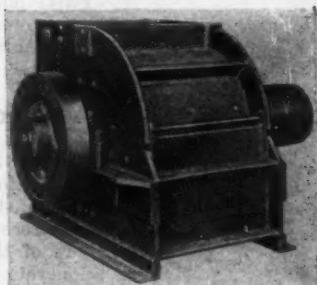
SUPERIOR CEMENT CORPORATION, Portsmouth, Ohio, suffered a fire loss on October 13 which caused damages estimated at \$75,000. The fire broke out in the packing plant, burning 300,000 paper and cloth bags.

RENFRO SHAFFER and HAROLD WOMACK, Thermopolis, Wyo., have started a sand and gravel business four miles north of this city.



SPEED UP the JOB

- An EAGLE LOADER handles any loose material easily, quickly.
- One-man operation cuts cost.
- From job to job at truck speeds.



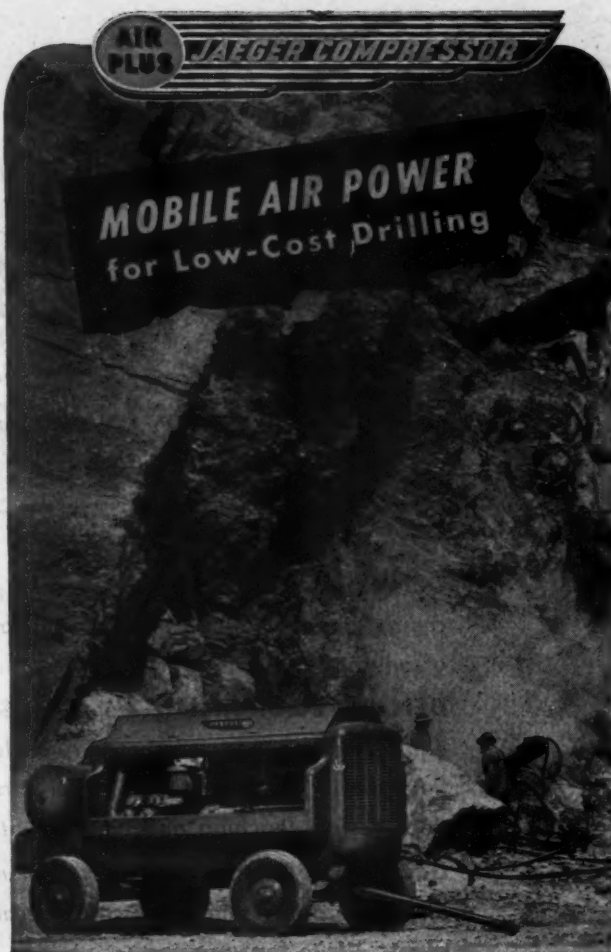
Let an EAGLE Crusher Do it!

- One-piece, [welded frame]—maximum strength, minimum weight.
- Special alloys for greater strength.
- A variety of models to meet your needs.

Write for detailed
Specifications!



EAGLE
CRUSHER CO., Inc.
Galion, Ohio



Out where new drilling begins, operators are often finding that the quick, economical way to get there is with Jaeger air-cooled portable compressors. Their rugged, modern trailer mounting (structurally welded frame, spring suspension, Timken bearings, big pneumatic tires, automotive steering) safely takes them wherever trucks can travel. Provides mobility and flexibility of air supply with a range of sizes up to 500 cu. ft. of free air per minute (ample for two wagon drills, as many as 9 rock drills), delivered at cooler temperatures and less cost for fuel and upkeep than you have ever thought possible.

Jaeger "AIR PLUS" Compressors are not to be confused with old-type portables. They are unit-engineered, precision built and balanced machines, with full force feed lubrication, 75% to 100% bigger valves, 20% to 30% slower piston speeds, 100% efficient air intercooling and 30% to 50% larger air receivers.

Latest Caterpillar, International and Continental engines supply dependable power. Sold and serviced in over 100 cities. Send for Catalog JC-5.

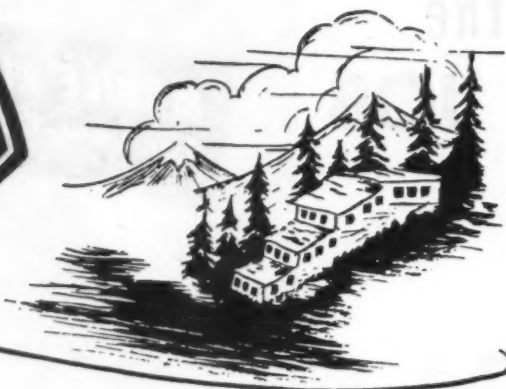
THE JAEGER MACHINE CO.

Main Office and Factory — Columbus 16, Ohio

REGIONAL OFFICES

8 E. 48th St. 226 N. LaSalle St. 235-38 Martin Bldg.
New York 17, N. Y. Chicago 1, Ill. Birmingham 1, Ala.

AIR COMPRESSORS, MIXERS, PUMPS, HOISTS, PAVING
MACHINERY, TRUCK MIXERS — DISTRIBUTORS IN 120 CITIES



DENVER ORE TESTING... for the processing, beneficiation, and concentration of any material mined from the earth.

DENVER EQUIPMENT... complete plant equipment for processes requiring flotation, gravity concentration, counter-current decantation, leaching and amalgamation.

DECO TREFOIL... contains current metallurgical data from successful operating plants. Write for your copy.

DENVER "SUB-A"

STANDARD THE WORLD OVER



"The firm that makes its friends happier, healthier, and wealthier"

DENVER EQUIPMENT COMPANY
P.O. BOX 5268 • DENVER 17, COLORADO

DENVER 17, COLORADO, P.O. Box 5268
NEW YORK CITY 1, N.Y., 4114 Empire State Bldg.
CHICAGO 1, 1123 Bell Bldg., 307 N. Michigan

TORONTO, ONTARIO, 45 Richmond Street W.
VANCOUVER, B.C., 305 Credit Foncier Bldg.
MEXICO, D.F., Edificio Pedro de Santa Gorta 7

LONDON, E.C.2, ENGLAND, Tallisbury House
JOHANNESBURG, S. AFRICA, 8 Village Road
RICHMOND, AUSTRALIA, 530 Victoria Street



**MONARCH Whyte Strand
PREformed WIRE ROPE**

made to meet the needs of

ROCK PRODUCTS OPERATORS

- Made from selected steels
- Internally lubricated
- PREformed
- Made by craftsmen with years of experience

the **CORRECT** Rope for your equipment
Ask For Macwhyte Catalog!

170 pages of information. Please request it from any Macwhyte Wire Rope Distributor or from

Macwhyte Company

2949 Fourteenth Ave., Kenosha, Wis.
MILL DEPOTS: New York, Pittsburgh, Chicago, Minneapolis, Ft. Worth, Portland, Seattle, San Francisco, Los Angeles.
Distributors throughout the U. S. A.

with funds provided out of company cash and through a serial issue maturing over five years.

SCHUMACHER WALL BOARD CORPORATION, Los Angeles, Calif., reported a net income of \$103,663 for the eight months to December 31, 1945. Net sales in this period were \$1,164,035.

PENNSYLVANIA-DIXIE CEMENT CORPORATION, New York, N. Y., had a net profit of \$214,803 for the three months to June 30, 1946. Net sales during this period were \$2,764,650.

GYPSON, LIME & ALABASTINE, CANADA, LTD., is planning to redeem upwards of \$400,000 of 1st 5½s, due 1948, according to P. P. Tyler, managing director. The Financial Post, Toronto, reports sales and profits of the company for the first six months of the fiscal year ended May 31, 1946 are well ahead of last year. No dividend has been paid since 1931, but it is confidently believed that when re-financing has been completed, dividends may be resumed. The new rock wool unit at Caledonia, Ont., has tripled capacity of this product. Two shifts are being operated at the New Westminster, B. C., Gypsum Plant, but lack of sufficient gypsum from the Falkland, B. C., deposits, due to a manpower shortage, has prevented three-shift operation.

Speak to Masonry Association

DEANE R. LYNDE, president, and **E. W. DIENHART**, executive secretary of the National Concrete Masonry Association, stopped off in Houston, Texas, on a recent tour, to address the members of the newly organized Houston Concrete Masonry Association. Officers of the new organization are: **R. L. Rowan**, president; **B. M. Craig** and **G. W. Smith**, vice-presidents; **P. A. Kahle**, secretary; **R. W. Ford, Jr.**, treasurer, and **L. H. Jolley**, publicity chairman.

Council Secretary

ANDREW L. HARRIS, formerly with the Eagle-Pitcher Sales Co., Cincinnati, Ohio, as manager of sales promotion, has been appointed executive secretary of the Producers' Council, Inc., Washington, D. C. Mr. Harris has spent 14 years in the construction industry, starting in 1933 with the U. S. Gypsum Co., New York, N. Y., in sales and promotion work.

Search for Fluxstone

JONES & LAUGHLIN STEEL CORPORATION is investigating limestone deposits along the Ohio River near Gallipolis, Ohio to cut down transportation costs, according to a local report.

Open Stone Plant

THE NASHVILLE CRUSHED STONE CO., Nashville, Tenn., has announced the opening of its new plant located on Thompson Lane near Glenncliff Station.

INFORMATION

You can obtain catalogs listed on these pages by merely checking and mailing the coupon below.

TO HELP YOU MEET TODAY'S PROBLEMS AND TO MAKE PLANS FOR TOMORROW

1 BLOCK MACHINES—Stearns Mfg. Co., Inc. has issued a service manual and parts catalog for Clipper Stripper block machines. Descriptions of Model A, C, D, and E, together with information on operation, maintenance, lubrication and service troubles are also included. The catalog also contains sectional views of the machine, exploded views of the various parts, and typical installations.

2 CENTRIFUGE—Centrifuge Mechanical Equipment, Inc., has released a four-page bulletin describing and illustrating continuous centrifuges for fast, continuous, economical dewatering, classifying, fractionating, dewatering, thickening and extracting. Standard specifications and cross-section views of screen and solid bowl type units are also given.

3 COMPRESSORS—Worthington Pump & Machinery Corp. new bulletin, No. L-640-B1A, describes and illustrates various types of single horizontal air and gas compressors. Specifications, cross-section views, dimensions, and other general data are also given.

4 COOLING SYSTEMS—Binks Mfg. Co. has released a 20-page booklet, Bulletin No. 351, describing and illustrating Diesel engine cooling systems. Diagrams, blueprints, tabulations, area rating tables, etc. are also included in the bulletin.

5 CONCRETE MAINTENANCE—The Master Builders Co. has released Volume 1, No. 9, of The Trowel, a bulletin published periodically by the company, containing information on concrete maintenance, causes of concrete disintegration and how to make successful repairs. The bulletin is graphically illustrated and shows many typical applications.

6 CONTROLS—Allis-Chalmers Mfg. Co. new 12-page engineering bulletin, 14-B-6641, describes and illustrates direct current remote indicating and control systems. Specifications and outline dimensions of various types of transmitters, receivers and indicators, also schematic diagram of the system, are shown.

7 CONTROLLERS—The Foxboro Co. has released Bulletin 361, describing and illustrating Model 40 controllers for process control. Design and construction details, operation and maintenance are included.

8 CRUSHING & SCREENING PLANT—Pioneer Engineering Works, Inc., new bulletin, Form No. 567, describes and illustrates the new 46-VE Duplex crushing and screening plant with Diesel and electric drives. Construction details, specifications, information tables and diagrams are also shown.

9 DRIVES—Electric Machinery Mfg. Co. has issued a 16-page bulletin, Pub. No. 183, describing and illustrating adjustable speed magnetic drive units for boiler draft fans, pumps, compressors, blowers, etc. Diagrammatic cross-sections, outline drawings and typical installations are also shown.

10 DUMP TRUCKS—The Heil Co. has issued Bulletin BH-4534, describing and illustrating telescopic hydraulic dump trucks and hoists ranging in capacity for 8½ to 36 cu. yd. Also Bulletin BH-4663 describing and illustrating twin arm hoists for heavy duty trucks.

11 ELECTRODES—The Sight Feed Generator Co. has released a four-page bulletin describing and illustrating Rexarc overlay

electrodes for all ferrous metals and alloys. Bulletin also includes procedure and operating technique.

12 FORGED FLANGES—Kropp Forge Co. has issued a new Stock Flange List No. 225, illustrating and describing forged steel flanges in boiler, marine, welding, high hub, double hub, tank, spud, offset and horse-shoe types. Sectional drawings, specifications and list prices, tables showing American Standards for threads, dimensions of wrought pipe, etc. are also shown.

13 GENERATORS—Cyclotherm International, Inc., has published a four-page bulletin describing and illustrating Cyclotherm steam generators ranging from 10 to 200 hp., including ratings and dimensions.

14 GRADERS—Caterpillar Tractor Co. has issued a new folder, Form 9730, describing and illustrating the Diesel No. 212 motor grader. Construction details, operational data, specifications, and attachments are also given in the bulletin.

15 FEEDERS—Traylor Engineering & Mfg. Co. has issued a new bulletin, No. 114, describing and illustrating crusher, grizzly, apron, mill, table and slurry feeders. Sketches of typical applications are also included.

16 FEEDERS—Hardinge Co., Inc., new 12-page Bulletin No. 33-D describes and illustrates constant-weight and volumetric feeders for use in the mining, chemical and industrial fields. Construction details, capacities and dimensions, sketches and typical applications are also shown.

17 FEEDERS—Fuller Co. has issued an 8-page bulletin, No. F-2, describing and illustrating feeders for dry pulverized, fine, crushed and granular materials. Roll, vane-type, enclosed, adjustable, trap door and positive cut-off rotary feeders are illustrated and described, also rotary-discharge gate valves.

18 HOISTS—Ingersoll-Rand Co. new 54-page bulletin, Form 5300, describes and illustrates various sizes and types of mine hoists. Cross sections, operation views showing hoists in varied applications, and diagrams illustrating possible hook-ups are included. Air tools and accessories are also shown.

19 HOISTS—Lisbon Hoist & Crane Co. has published a new bulletin describing and illustrating the Bob-Cat electric cable hoist. Construction details, specifications, prices and cross-section views are also included.

20 HOUSE BUILDING MACHINE—R. G. LeTourneau, Inc., has released Bulletin T-100 describing and illustrating the Tournalayer house building machine. The bulletin also contains many illustrations and floor plans of typical homes, specifications, operational data and equipment rental cost, etc. of the machine.

21 KILNS—Vulcan Iron Works has released Bulletin A-435, describing and illustrating rotary kilns, coolers and dryers; complete drying installations; rotary and vertical lime kilns; ball, rod and tube mills; double-roll briquetting machines, hoists, sheaves, and conveyors. Also illustrated and described are Diesel-electric, Diesel and gasoline, and steam locomotives.

Fill Out Reverse Side—MAIL TODAY

**FIRST CLASS
PERMIT NO. 1417
(Sec. 510, P.L.&R.)
CHICAGO, ILL.**

BUSINESS REPLY CARD

No Postage Stamp Necessary If Mailed in the United States

— POSTAGE WILL BE PAID BY —

ROCK PRODUCTS

309 WEST JACKSON BOULEVARD

CHICAGO 6, ILL.

FREE!

Information on

NEW LITERATURE

about your business

USE
COUPON
BELOW

22 LUBRICATION—Lubrication Engineering, the journal of the American Society of Lubrication Engineers, has reprinted a talk on Centralized Lubrication, made by A. J. Jennings, vice-president of The Farval Corp. at the recent meeting of the Society. In his talk Mr. Jennings traces the history of centralized lubrication and describes some of the systems and devices in current use. Detailed descriptions of some types of application, including presses and forging machines, machine tools, rolling mills, and rubber mills.

23 LUBRICATION—Sun Oil Co. has issued a new, revised technical bulletin No. B-1, entitled "Lubrication of Diesel Engines" giving a brief history of Diesel engines, fundamentals of design, types, fuels and lubricating oil recommendations. Schematic diagrams, cross-sections, cut-away views, A.S.T.M. standard viscosity-temperature charts, maintenance and operation, and trouble-shooting chart are also included.

24 MOISTURE METER—J. Thos. Rhamsine has issued a leaflet describing and illustrating moisture meters for determining per cent free-moisture in concrete sand in two models, field or plant. Specifications and prices are also given.

25 MOTOR CONTROLS—Electric Machinery Mfg. Co. has released Volume 7, No. 3 of the E-M Synchronizer entitled "The ABC of Synchronous Motor Control" describing and illustrating in detail the story of synchronous motor control. Connection diagrams, control chart, suggestions for the operator, etc. are some of the subjects covered in this 20-page booklet.

26 MOTOR CONTROLS—Electric Machinery Mfg. Co. has released a 4-page bulletin, Pub. No. 170, describing and illustrating

ing the inch motor control. Equipment, operation and typical installations are also included.

27 MIXERS—Chain Belt Co. has released a 20-page bulletin, No. 46-8, describing and illustrating the 1947 line of Rex moto-mixers in 2-, 3-, and 4½-cu. yd. capacities. Included in the bulletin is a complete set of specifications, diagrams, information on discharge chute lengths, dimensions, and typical applications.

28 SCREENS—Hendrick Mfg. Co. has issued a new 128-page catalog of perforated metals, screens, and fabricated metal products. The catalog describes and illustrates 390 shapes and sizes of openings in perforated metal, also vibrating, flanged lip, milled-slot and wedge-slot screens, and screens for sizing and dewatering. Perforated metal grilles, ornamental perforated metal, open steel flooring, Armorgrids and Shur-Site treads are also shown.

29 POWER PLANTS—Worthington Pump & Machinery Corp. has released Bulletin No. WP-1099-B50, describing and illustrating steam turbine generator power plants in 500-, 1000-, and 2000-kw. capacities. Schematic diagrams, typical applications, installation and operational data, and plan and elevation drawings are included.

30 SHOVELS—The Osgeod Co. has published Bulletin No. 4619 describing and illustrating Type 81 crawler mounted shovel, dragline, clamshell, crane and backhoe of medium size.

31 SHOVELS—Buckeye Traction Ditcher Co. new 36-page bulletin, No. 846, describes and illustrates Clipper power shovels, trench hose, draglines and cranes. A material weight chart, specifications, capacities, working range diagrams, etc., are also given.

32 SURFACING MORTAR—Quigley Co. has published Bulletin No. 315E, describing and illustrating a plastic super-refractory surfacing mortar known as "Q-Chromatic" for use in furnaces, boilers, fire boxes or combustion chambers and arches in ceramic, lime, and other types of kilns.

33 TRACTORS—Caterpillar Tractor Co. has released a new booklet entitled, "A Future with a Past," describing and illustrating the evolution of earthmoving equipment from the early wood-burning wheel-type tractors to the present track-type Diesel-powered tractors, bulldozers and scrapers. The bulletin contains many illustrations of past and present types of equipment.

34 TRACTORS—Allis-Chalmers Mfg. Co. has published a 24-page catalog, No. M3-402A, describing and illustrating the improved HD-10 Diesel tractor. Also listed are standard equipment and auxiliary attachments, specifications, engine dimensions and fuel capacities.

35 TRACTORS—Caterpillar Tractor Co. has published a new 16-page booklet, Form 9547, entitled "When It's Power You Need" describing and illustrating a wide variety of uses for Diesel power in mining and pit and quarry operations. Many typical applications are shown of tractors, graders, scrapers, etc.

36 TRACTORS—Allis-Chalmers Mfg. Co. has released a 32-page catalog, M3-348A, describing and illustrating the HD-14 Diesel crawler tractor. Cutaway views of various parts, specifications, engine data, dimensions, steering details and fuel capacities are also given.

37 V-BELT DRIVES—The Dayton Rubber Mfg. Co. has published a new 384-page V-belt drive catalog No. 280. It is of convenient handbook size, 4¼ x 6¼ in., and each section is printed in color for ready reference.

38 WELDING—Metal and Thermit Corp. recent issue of Welding Briefs, Volume 7, No. 3 describes and illustrates examples of electric arc welding on gantry cranes, flat belt type wash, rinse and drying machines, etc.

39 WIRE ROPE—Preformed Wire Rope Information Bureau has published a new book entitled "Preformed Wire Rope—What it is—What it does." Well illustrated, this book tells the story of the development of preformed wire rope and what the preforming process does to wires in a rope. A chart shows average difference in service life between preformed and non-preformed wire rope on ten different machines.

40 RECUPERATORS—Manitowoc Engineering Works new Catalog No. VR-46 describes and illustrates the Vanderway recuperator for rotary kilns. Front and side elevation diagrams of Types F and S, together with typical applications are also given.

Detach and Send Us This Post Card

LOCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

(11-48)

I would like to have the items circled.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

(Please print or typewrite name and address)

Name

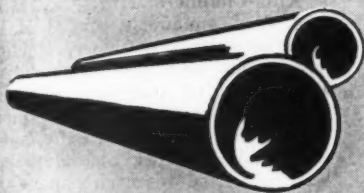
(Position)

Company

Street

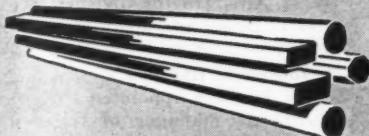
City & State

BARGAIN PRICES ON



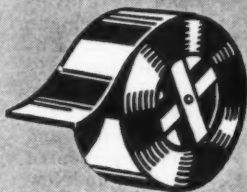
TUBING

Carbon, Alloy and some Stainless.
Both Welded and Seamless.



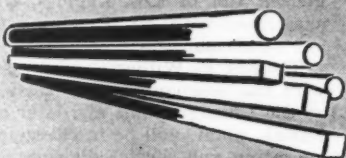
TOOL STEEL

Water-hardening, Oil-hardening and
High Speed Grades.



STRIP STEEL

Hot Rolled, Cold Rolled, Carbon,
Alloy, and Stainless.



BAR STEEL

Hot Rolled and Cold Finished in Car-
bon, Alloy, and Stainless.

All steel is subject to priority regulations. **VETERANS OF WORLD WAR II** are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

NO WAITING FOR HIGH GRADE Steel

Alloy steel billets, blooms, bars, plates, are all immediately available through your War Assets Administration. Bars include rounds, squares, flats and hexagons. Suitable for substitute and re-rolling purposes.

Low prices on this high grade steel make it practical for low-cost products.

For complete information on steel send this coupon to your nearest WAA Regional Office:

TO: WAR ASSETS ADMINISTRATION

Please send me, without obligation, full information on the availability, condition and location of the following checked items:

- | | |
|--|--|
| 1. Billets, Blooms, etc. <input type="checkbox"/> | 4. Stainless Steel Bars, Strips, and Sheet Standard Types <input type="checkbox"/> |
| 2. Carbon and Alloy Bars <input type="checkbox"/> | 5. Valves and Fittings <input type="checkbox"/> |
| 3. Wire Rope and Aircraft Cable <input type="checkbox"/> | 6. Mechanical Tubing, Carbon, Alloy, and Stainless <input type="checkbox"/> |

NAME.....

FIRM.....

ADDRESS.....

CITY.....STATE.....

157-8

WAR ASSETS ADMINISTRATION

GOVERNMENT
OWNED
SURPLUS

Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

Louisville • Minneapolis • Nashville • New
Orleans • New York • Omaha
Philadelphia • Portland, Ore. • Richmond
St. Louis • Salt Lake City • San Antonio
San Francisco • Seattle • Spokane • Tulsa

157-8

Breaking into Today's News!

Brooks **LOAD LUGGER**

Use 5 to 10 dump buckets with one Load Luger. It beats a fleet of ordinary trucks.

Easy to mount on any chassis. Only 15 seconds for picking up or dumping load. Ask for Catalog.



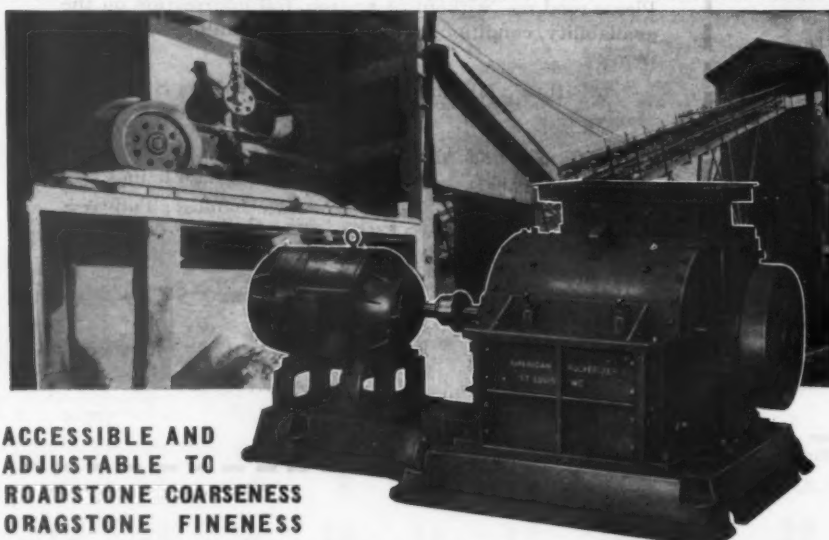
America's safest, simplest, fastest mechanized loading and dumping unit for quarry, highway, industrial or construction work.

Brooks EQUIPMENT AND MFG. CO.

Distributors in all Principal Cities

105 Davenport Rd. Knoxville 8, Tenn.

FOR FLEXIBILITY—AMERICAN CRUSHERS



ACCESSIBLE AND
ADJUSTABLE TO
ROADSTONE COARSENESS
ORAGSTONE FINENESS

Americans offer custom-built models to best fit your particular operation and type of stone in your quarry. High tonnages in the one-step or circuit operations. Resistant to clogging. Capacities up to 250 TPH. Ask any of the many who operate Americans.

Send for bulletin on Rock Crushing Data.

American PULVERIZER COMPANY

Originators and Manufacturers of
Ring Crushers and Pulverizers

1245 MACKLIND AVE.
ST. LOUIS 10, MO.

Manufacturers' News

Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces that C. E. Frudden, consulting engineer, tractor division has been elected president of the Society of Automotive Engineers. Mr. Frudden took his engineering degree from Iowa State College and did graduate work at Columbia. He has submitted research papers to the S.A.E. and the American Society of Agricultural Engineers. He joined the Allis-Chalmers tractor organization in 1929. Shortly before the war he was promoted from chief engineer of the West Allis tractor division to executive engineer of the entire tractor division.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., has appointed Frederick A. Purdy as manager of the new Los Angeles plant. Mr. Purdy joined Ryerson in 1931, two years after his graduation from the University of Michigan School of Engineering. He served first as an engineer at the Buffalo plant and later represented the firm in New York State as head of the Rochester district sales office for four years.



Frederick A. Purdy

Theodore L. Kishbaugh, an alumnus of Lafayette College and a former executive of the Earle M. Jorgensen Co. of Los Angeles, will be associated with Mr. Purdy as assistant plant manager.

Thomas E. Williams, who has been with the company for 23 years, first at the Chicago plant and later at the Buffalo plant, will be in charge of the operating and service divisions.

Vernon D. Rogers has been appointed office and credit manager. He became a member of the company in 1936, and was recently discharged from the Army with the rank of Lieutenant Colonel in the Quartermaster Corps.

George W. Gilliland, who has been in charge of the Los Angeles office, will continue in a sales capacity.

Other members of the field sales staff are; John Fennie, Harold Christian, Richard Deland, Merle Anderson, Milford Tiner and Ernest Lindgren.

Caterpillar Tractor Co., Peoria, Ill., has announced the appointment of R. E. Jeffries as district representative for the Eastern sales division. Mr. Jeffries will contact the Michigan Tractor & Machinery Co. of Detroit, Ohio Machinery Co. of Cleveland and West Virginia Tractor & Equipment Co. of Charleston.

International Harvester Co., Chicago, Ill., announces that D. F. Kuntz, assistant manager, Toledo, has been transferred to Minneapolis motor

truck branch in the same capacity; W. H. Brisendine, former retail truck sales manager at Nashville, Tenn., has been appointed assistant manager of that branch; R. B. Livesay, formerly sales promotion manager at Charlotte, N. C., has been appointed assistant manager of the Birmingham, Ala., branch; and W. O. Bolitho, formerly assistant manager, Billings, Mont., has been appointed special traveler for the refrigeration division covering the Northwest district.

Davey Compressor Co., Kent, Ohio, has appointed Brock Tractor Co., Buffalo, N. Y., as distributor of Davey compressors in New York counties of Niagara, Orleans, Monroe, Wayne, Erie, Genesee, Livingston, Ontario, Wyoming, Chautauqua and Cattaraugus; also The Textile Oil Co., Greenville, S. C., in South Carolina counties of Greenville, Oconee, Anderson, Spartanburg, Laurens, Newberry, Greenwood and Pickens.

Stearns Magnetic Mfg. Co., Milwaukee, Wis., has announced the appointment of Curtis H. Stout as sales representative to cover the State of Arkansas. Frank Brunner, former assistant superintendent at the main plant, has been named superintendent of the brake factory, and Herbert L. Piasecki has been appointed office manager at Milwaukee.

Union Wire Rope Corp., Kansas City, Mo., has announced the election of L. G. Schraub to the board of directors. Mr. Schraub is vice-president and general manager of the company.

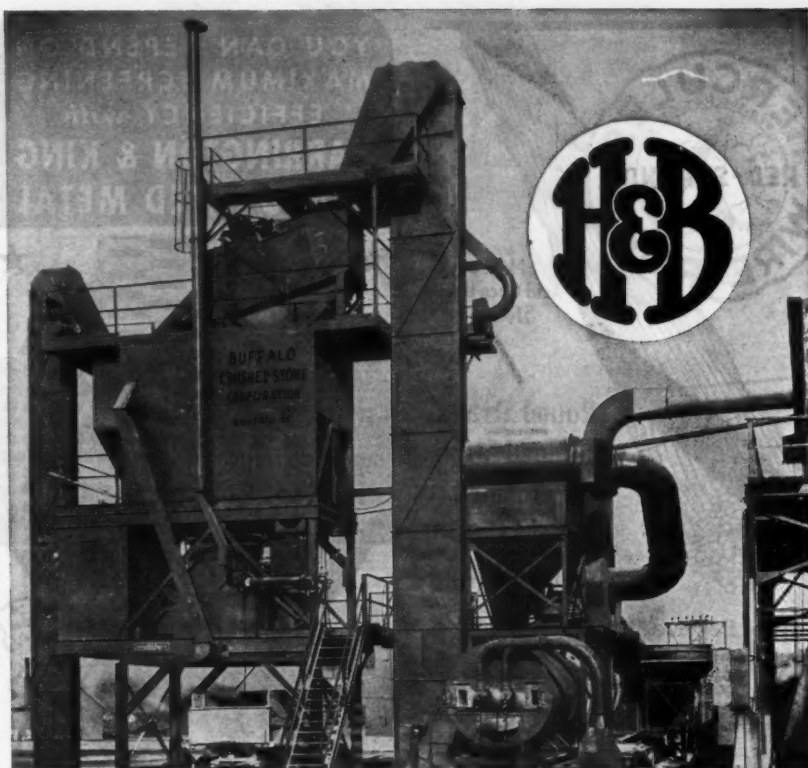
Four Wheel Drive Auto Co., New York, N. Y., announces the appointment of the American Air Compressor Corp. as distributor in the State of New Jersey.

Brill Equipment Co., New York, N. Y., announces the appointment of Stephen M. Schuster as advertising manager. Mr. Schuster was recently discharged from the Navy with the rank of Lieutenant (j.g.).

Foxboro Co., Foxboro, Mass., has announced the erection of a new plant in the Ville LaSalle section of Montreal, Canada, by The Foxboro Co., Ltd., which will consolidate machining, metal finishing, assembly and calibration of instruments, etc., on one floor level. John H. Bolton will continue as manager.

Arnold Andrews, industrial sales promotion, Milwaukee, Wis., has been awarded Certificate of Award by the National Industrial Advertisers Association for most effective use of business paper advertising for the R. G. LeTourneau campaign on the small Tournapull.

Cummins Engine Co., Inc., Columbus, Ohio, has appointed Leonard W. Beck as acting general sales manager with overall administration of the distribution division (sales and service). Mr. Beck will continue as manager of the Central region with offices in Columbus, Ind. Byron A. Duling, manager of the Cleveland region, has been assigned to the Columbus office to



"GREATLY PLEASED WITH THE RESULTS OBTAINED"



THE MOTOPAVER

The new self-contained, self-propelled complete traveling mixer and paver. Mixes, spreads and lays any medium or low-cost type bituminous material—to any road width, thickness, crown. Bulletin MP-46 sent on request.

★ The H & B Portable Asphalt Plant shown above was delivered and put in operation last spring. Mr. F. W. Schmidt, president of the Buffalo Crushed Stone Co., owners, says: "After three months operation we want to tell you how greatly pleased we are with the results obtained. We are particularly impressed with the ease and economy of operation of the fluidometer and automatic mixing cycle. The product of this plant has met with very favorable acceptance from our customers."

H & B Portable and Stationary Asphalt Plants are available in a wide range of capacities. Write for literature.

HETHERINGTON & BERNER INC.
745 Kentucky Avenue, Indianapolis 7, Indiana



UNIVERSAL VIBRATING SCREENS

give best results

Guaranteed to give you best results on your most difficult separations. UNIVERSALS are of rugged yet simple construction, lowest in first cost and in maintenance. UNIVERSALS have been tried and proved in 25 years of dependable service.

Write for 32-page catalog on screens and screening.



Type
"MR"
42"x96"
Double
Deck

★ ★ ★ **UNIVERSAL VIBRATING SCREEN CO.** ★ ★ ★
RACINE - WISCONSIN



Made of
Acid Open Hearth
Steel Wire

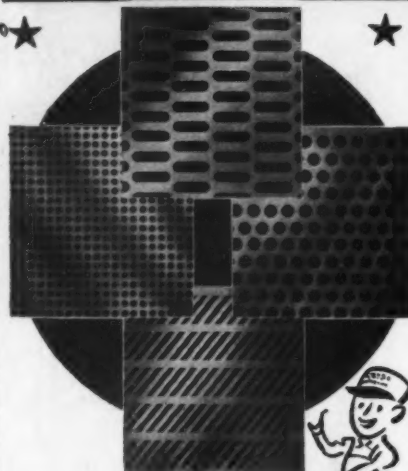
Round Strand
Flattened Strand
Preformed
Steel Clad
Non-Rotating

The Service Record of this
wire rope continues to make
and hold friends.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.

Established 1857
5909 Kennerly Avenue St. Louis, Mo.
New York — Chicago — Denver
San Francisco — Portland — Seattle

YOU CAN DEPEND ON
MAXIMUM SCREENING
EFFICIENCY with
**HARRINGTON & KING
PERFORATED METAL**



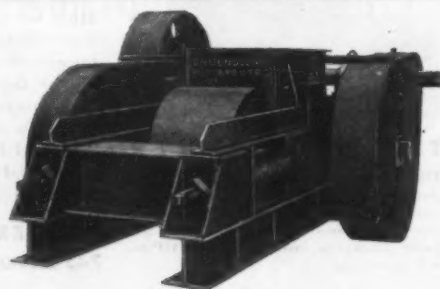
Write for Catalog
and Prices

**The Harrington & King
PERFORATING CO.**

5650 FILLMORE ST., CHICAGO 44, ILLINOIS
114 LIBERTY ST., NEW YORK 6, N. Y.

For Maximum
Reduction, Economy,
Production, and Safety

**GRUENDLER
ROLL
CRUSHERS**



Five Models—Nos. 18, 24, 30, 40, and 56 in a variety
of stationary and portable designs.
WRITE FOR CATALOG NO. 700



Built to the highest standards of quality and precision, includes enclosed all-gear drive,—solid manganese shells,—X-braced frame,—roller bearings throughout,—designed to take many times as much load as it will ever receive in service. You may choose smooth, corrugated, step tooth or a combination of any of these rolls in the proper diameters to produce the desired stage of reduction in combination with jaw or other primary crushers.

MFGRS. of JAW CRUSHERS and HAMMER MILLS

GRUENDLER

CRUSHER & PULVERIZER CO., DEPT. R. C., 2917 N. Market, St. Louis 6, Mo.

work directly under Mr. Beck. Corwin B. Briscoe has been appointed acting parts merchandising manager at Columbus; Norman E. Palmer will represent the company in Washington D. C., and Fred W. Sparks has been made manager of the Cleveland region. James D. Allen continues as sales manager of dealer operations at Columbus, and Kenneth M. Leech as service manager at Columbus.

Lincoln Electric Co., Cleveland, Ohio, has announced the election of C. M. Taylor as executive vice-president.

Mr. Taylor has been with the company since 1916, having been granted a leave of absence for service in World War I. He enlisted in the Air Corps in 1917 and returned at the end of the war, when he became a foreman. Later he was placed in charge of the time study and methods department, advanced to assistant superintendent and then superintendent. In 1928, he was appointed vice-president in charge of sales and has served on the board of directors since 1927. He is a member of the American Welding Society and the Cleveland Chamber of Commerce.



C. M. Taylor

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y., recently presented 35 employees, including J. E. Kennedy, president, and Fred O. Reedy, vice-president and general manager, with a letter of appreciation and a gold pin for 25 years of continuous service. The presentation was made at Danville, Ill., by Mr. Reedy, who expressed the corporation's appreciation for their faithful and loyal service.

Quaker Rubber Corp., Philadelphia, Penn., has announced the appointment of Frank A. Rowe as district manager of the fire hose division in Philadelphia, Penn., and P. H. Penman as district manager of the fire hose division in Cleveland, Ohio.

Logan Engineering Co., Chicago, Ill., has appointed Patterson Sales Co., El Paso, Texas, as distributor of the aridifier in Arizona, New Mexico, Mexico and Central America.

Wells Petroleum Co., Chicago, Ill., has been appointed distributor for RPM motor oil, RPM heavy duty motor oil and RPM Delo, to all points in northern Illinois and northern Indiana.

Bemis Bro. Bag. Co., St. Louis, Mo., announces the appointment of T. A. Buck as sales manager of the Kansas City office. He has been associated with the company for more than eleven years.

Goodyear Tire & Rubber Co., Akron, Ohio, has announced the appointment of Harry A. Walker as plant engineer at the tire factory in Lecheria, Mexico.

Statement of the Ownership, Management, Circulation, Etc., Required by the Acts of Congress of August 24, 1912, and March 3, 1933

OF ROCK PRODUCTS, published monthly at Chicago, Ill., for October 1, 1946.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Charles Hoefer, Jr., who, having been duly sworn according to law, deposes and says that he is the Business Manager of ROCK PRODUCTS and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher — Maclean-Hunter Publishing Corp., 309 W. Jackson Blvd., Chicago 6, Ill.

Editor — Bror Nordberg, 309 W. Jackson Blvd., Chicago 6, Ill.

Business Manager — Charles Hoefer, Jr., 309 W. Jackson Blvd., Chicago 6, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Maclean-Hunter Publishing Corporation, 309 W. Jackson Blvd., Chicago 6, Ill. The stockholders of the Maclean-Hunter Publishing Corporation are John R. Thompson, 2511 Coyle Avenue, Chicago; J. L. Frazier, 2043 Orrington Ave., Evanston, Ill.; Col. J. B. Maclean, 7 Austin Terrace, Toronto, Ont., Canada; Horace T. Hunter, 120 Inglewood Drive, Toronto, Ont., Canada; The Maclean-Hunter Publishing Co., Ltd., 481 University Ave., Toronto, Ont., Canada.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and that this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or other wise, to paid subscribers during the twelve months preceding the date shown above is _____ (This information is required from daily publications only.)

Charles Hoefer, Jr.,
Business Manager

Sworn to and subscribed before
me this 3rd day of Oct., 1946.

[SEAL.]

M. E. Johnston
(My term expires October
22, 1949.)

★ ★ ★

Steelcar

★ ★ ★

MODERN, DEPENDABLE

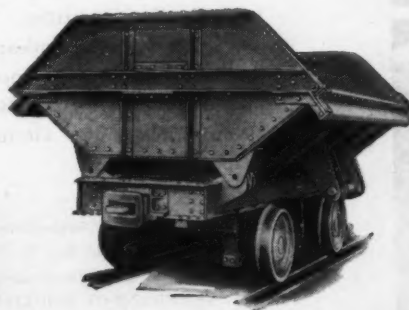
Haulage Equipment for EVERY SERVICE



Low height Granby Type Car—
30 cubic feet capacity.



Four-way dump scoop car
for general service.



Tray Type Dump Cars

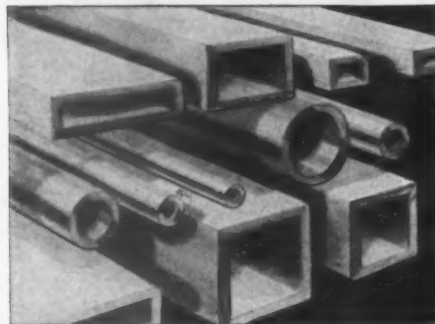
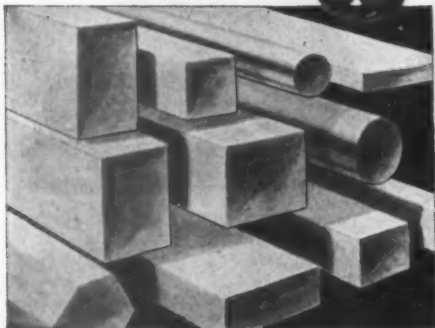


Descriptive Bulletins describing these and other types
of cars for metal mining service sent on request.

PRESTO STEEL CAR COMPANY, INC.
PITTSBURGH 19, PA.
NEW YORK . . . CHICAGO . . . ST. LOUIS . . . PHOENIX

NOW

Brass Mill Products Quickly!



A large supply of brass mill products is now offered to the trade at unusually low prices. The entire inventory may be fabricated by normal production methods and is being sold in production quantities.

The inventory includes: Free Turning Brass Rod—1 inch diameter and larger; Copper and Brass Tubing—3 inch O.D. and larger; Naval Brass Rod—various diameters; Aluminum Bronze, Manganese Bronze and Silicon Bronze in various shapes.

• • •

This material is offered in the following sequence as provided by law: (1) Certified Veterans of World War II; (2) Subsequent priority claimants; (3) Non-priority purchasers. Federal agencies have had opportunity to fulfill their needs. VETERANS OF WORLD WAR II should apply to their nearest WAA Regional Office for certification; the case number assigned and the location of the certifying office must be stated in a Veteran's offer to purchase.

EXPORTERS: The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

WAR ASSETS ADMINISTRATION

Offices located at: Atlanta • Birmingham
Boston • Charlotte • Chicago • Cincinnati
Cleveland • Dallas • Denver • Detroit • Fort
Worth • Helena • Houston • Jacksonville
Kansas City, Mo. • Little Rock • Los Angeles

**GOVERNMENT
OWNED
SURPLUS**

Louisville • Minneapolis • Nashville • New
Orleans • New York • Oklahoma City
Omaha • Philadelphia • Portland, Ore.
Richmond • St. Louis • Salt Lake City • San
Antonio • San Francisco • Seattle • Spokane



ROCK PRODUCTS CONCRETE PRODUCTS and Cement Products

Power lift trucks speed handling of block in Burnet & Craig plant



Roy Darden Industries

ANNOUNCES



Millard R. Warren—Knoxville, Tenn. Inventor of "Warren 800" & "Warren Yard-Hoist" V. P. & Consulting Engineer of Roy Darden Ind. Inc. Entire career spent in concrete block manufacture and equipment design.

Minimum production 800—8 x 8 x 16 or equivalent blocks, or almost 10,000 bricks per hour.

Fully proved in the field by actual plant operation. No waiting for "bug" removal.

1,000 blocks per plant man per shift including all plant labor lowest unit labor cost.

Machine occupies minimum floor space in proportion to production.

3—8 x 8 x 16 or other equivalent blocks on one 9 lb. plain plywood pallet. Rust proof, light-wt. No concrete collection. Pallets oiled only every 2 weeks.

Maintenance and parts replacement cost reduced to minimum. 90% replacement parts are standard Link-Belt Company.

Fully automatic—One man only at front of machine for offbearing.

Heavy stabilizer on leveling head assures fully compacted even density block by all latest engineering standards.

Syntron—Magnetic vibration adopted after 7 years experimentation, on mold box and on leveling head.

Height of block held to 1/32" tolerance. The truest finished product money can buy.

Entire machine motivated by one 5 h.p. gear-head motor plus agitator motor.

More blocks per machine & labor dollar than any other machine available.

Designed with "submarine" efficiency. Features arranged to prevent any possible jamming to destruction.

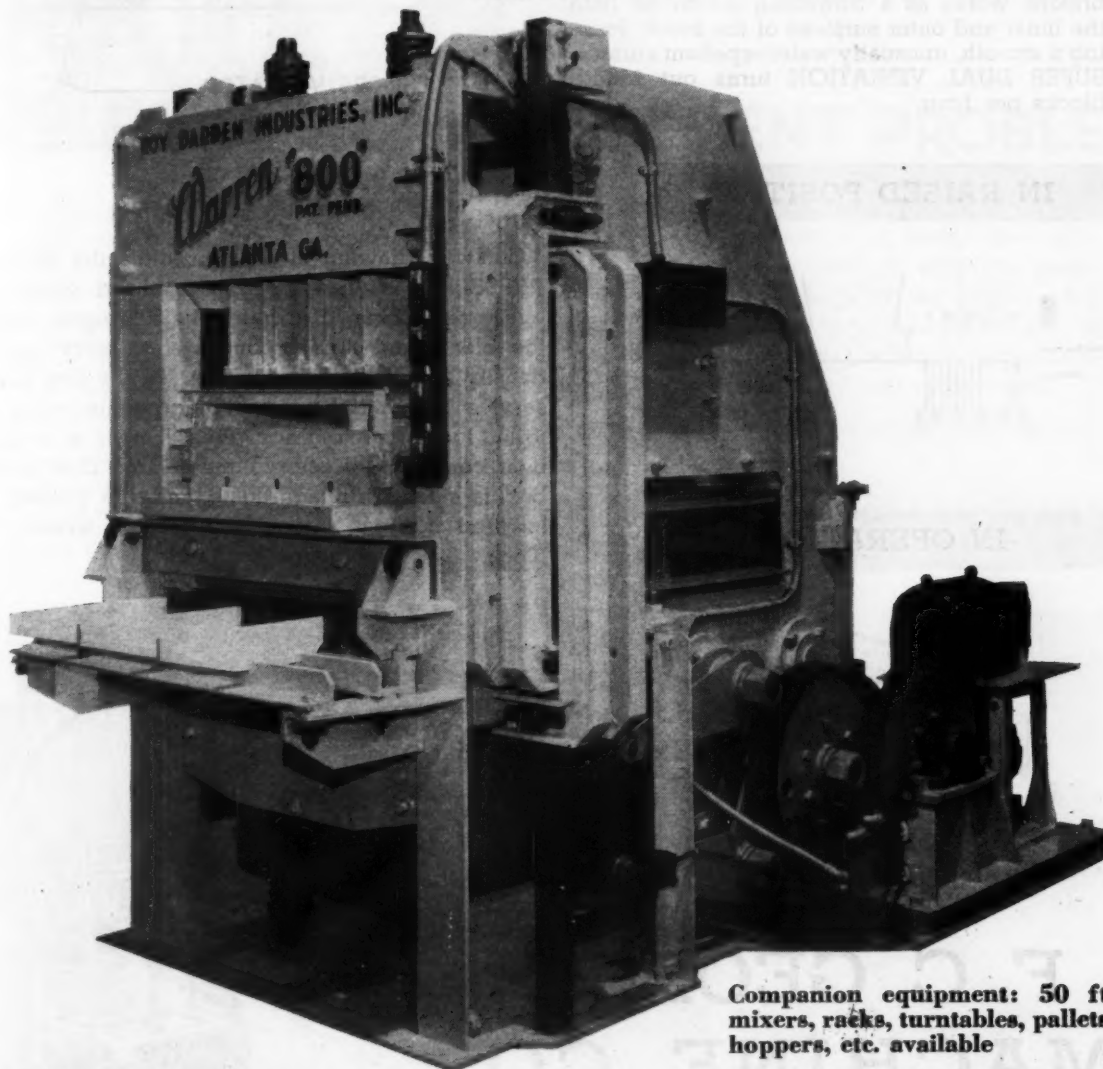
Designed for the large operator to hold his supremacy on the building boom market yet to come.

ROY DARDEN

ROY DARDEN INDUSTRIES INC. 313 BONA ALLEN BLDG. ATLANTA, GA. CABLE ADDRESS

The Warren '800' PAT. PEND.

- Super producing block machine
- The highest producing machine in the world
- Tomorrow's machine — 10 years ahead
- Designed and perfected by one of the leading geniuses in the industry
- Dedicated to the industry and those who appreciate these *advanced* features.



Manufactured by the Link-Belt Company, Atlanta plant under Warren patents pending—sold exclusively by Roy Darden Industries, Inc.

Companion equipment: 50 ft. mixers, racks, turntables, pallets, hoppers, etc. available

This machine can be seen in operation in the Hamilton Concrete Products Plant, Chattanooga, Tenn.

INDUSTRIES INC.

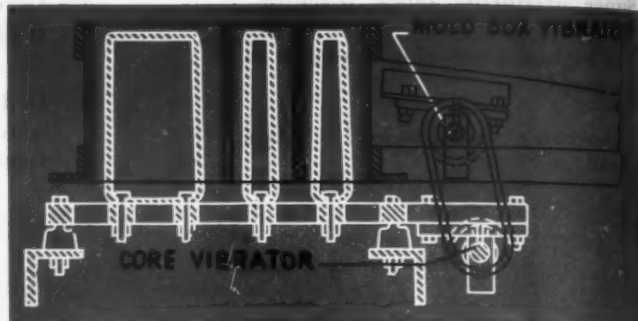
"DARDEN" ROY DARDEN INDUSTRIES SWN. DIV. INC. 1125 STONEWALL ST. DALLAS 10, TEXAS

ROCK PRODUCTS, November, 1946

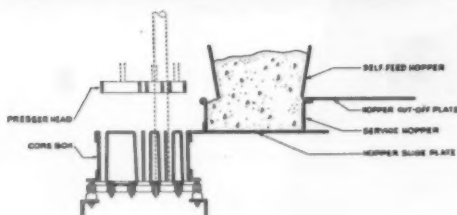
Why

THE GEORGE SUPER V CONCRETE BLOCK MACHINE PRODUCES *Sturdier* MASONRY UNITS *Faster*

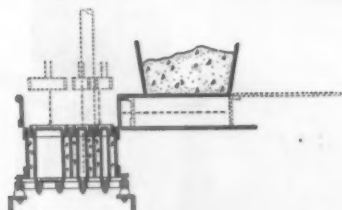
* Cutaway drawing at right illustrates the SUPER VIBRATION principle of the George machine. A coordinated dual mechanism shakes both the mold box and the mold cores simultaneously, settling the aggregate quickly and firmly. Violent up and down motion of both the mold box and cores, activated by the vibrators, works as a trowelling action on both the inner and outer surfaces of the block, forming a smooth, unusually water-repellent surface. SUPER DUAL VIBRATION turns out MORE blocks per hour.



IN RAISED POSITION



IN OPERATION



* Cutaway drawing at left illustrates the exclusive George PRESSPAC feature—the presser head which presses out every air pocket, distributes the aggregate evenly through the block, and thus produces a masonry unit of uniform density and texture throughout. In the first illustration, the service hopper is loaded with aggregate, ready for the shift to left to fill the mold box. Presser head is in raised position over core box spaces. In the second illustration the mold box is filled with aggregate and the presser head is in lowered position, forcing the mixture evenly through the block.



F. C. GEORGE MACHINE CO.

100 S. WESTMORELAND DR.

ORLANDO

FLORIDA



*Patent Pending



POZZOLITH SOLVES DIFFICULT

"For speed and economy, concrete required within the tunnel was dropped down 6 inch diameter pipes installed at 50 foot intervals along the sewer, use of a cement dispersing admixture (Pozzolith) in the cement making this uncommon delivery method practical . . . The resulting concrete flowed readily and was placed without segregation." (Engineering News Record May 16, 1946. Pgs. 78-81)

In addition to solving difficult placing problems, Pozzolith super concrete enables builders to meet more economically today's requirements of watertightness, strength and durability.

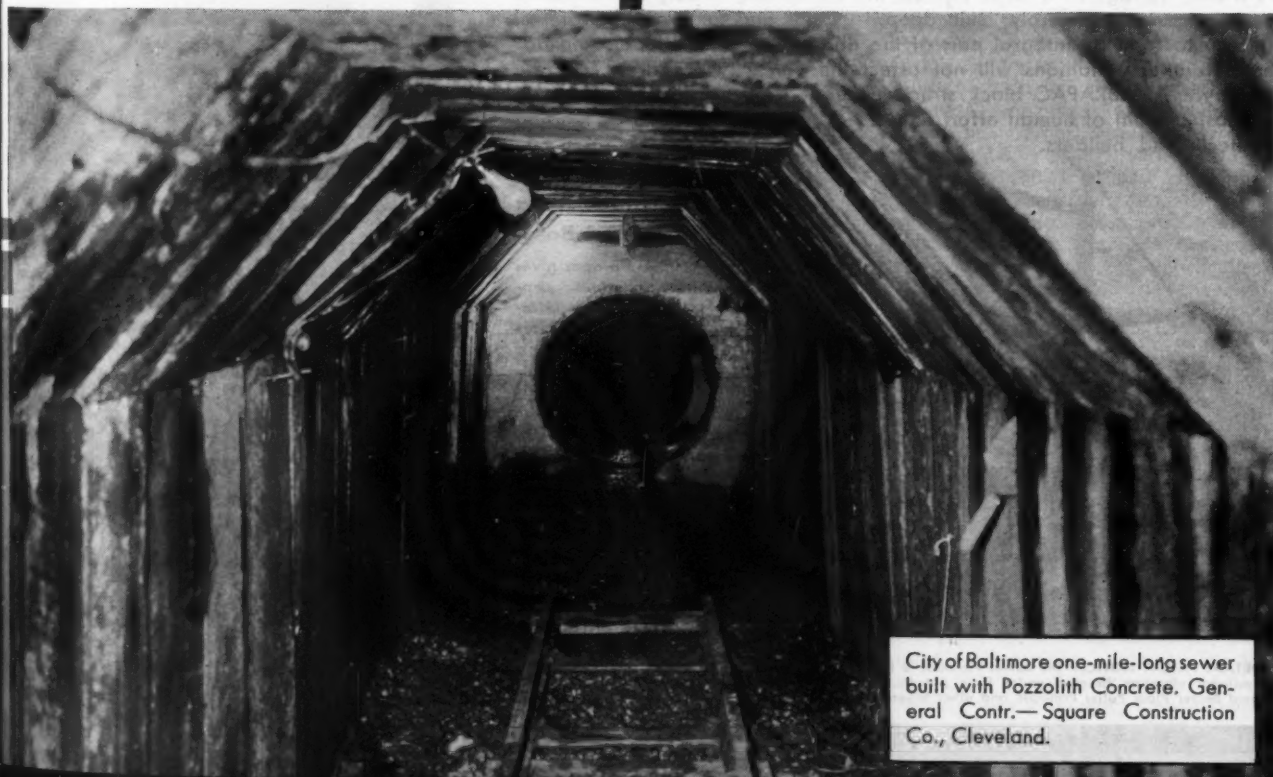
PLACEMENT PROBLEM

Pozzolith, cement dispersion, produces all the benefits of air entrainment at lower cost with *increased strength* in conformity with the water-cement ratio law. Findings of the Nation's top testing authority prove this. Pozzolith's use in millions of yards of concrete testify to its wide acceptance and high standards of field performance.

Write for complete information and Pozzolith bulletin.

THE MASTER BUILDERS COMPANY

CLEVELAND 3, OHIO • TORONTO, ONTARIO



City of Baltimore one-mile-long sewer built with Pozzolith Concrete. General Contr.—Square Construction Co., Cleveland.

MASTER BUILDERS

Beauty OF THE BLOCK IS MORE THAN SKIN DEEP



BESSER VIBRAPAC BLOCK
*adds Permanent Charm and
Beauty to ANY Type of Building*

With modern VIBRAPAC block, you build for permanent liveability. Whether it's a cozy cottage or a large edifice, the enchanting beauty of VIBRAPAC block is more than merely "skin deep." Color and texture penetrate all the way to form an integral part of the durable concrete block. And adverse weather conditions will not affect the correctly prepared concrete masonry. A VIBRAPAC block structure keeps itself spick and span with the least amount of human effort. Endorsed and recommended by leading architects and builders.

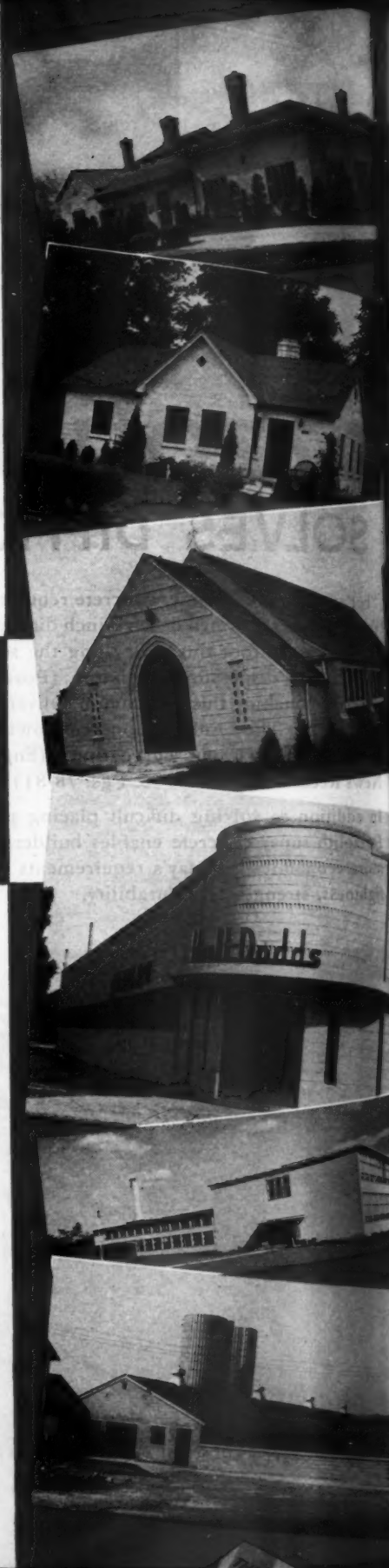


You can Produce Your VIBRAPAC Block on a Fast, Production Basis

The Besser Super Vibrapac gives you continuous, full capacity operation. No machine operator required. The Vibrapac produces three 8" x 8" x 16" block at a time on one plain pallet. Smaller units made in larger multiples on the same pallets. The Vibrapac is FULLY AUTOMATIC, including pallet feeding. One man off-bears full machine production with power hoist.

BESSER MANUFACTURING CO.
Complete Equipment for
Concrete Products Plants
211 46TH ST., ALPENA, MICH., U.S.A.

IMPORTANT PATENT NOTICE: The Besser Vibrapac is licensed under the Gelbman basic vibration patents. Unidirectional vibration licensed under Flam patents. The Vibrapac combines vibration with exclusive patented Besser Plain Pallet Principle and other Besser patents and patents pending.



BESSER PLAIN Pallet VIBRAPACS

THE SAVING IN PALLET COST
WILL PAY FOR A
BESSER VIBRAPAC
PLAIN Pallet STRIPPER

RAPID HANDLING of Block to Curing Rooms and Storage

**Burnet & Craig, Houston, Texas,
designs concrete products plant
with two machines set up in tandem**

By M. W. MESSER*

HOUSTON, Texas, with an annual buying income of 600 to 750 million dollars in the area, recently welcomed the installation of a new modern, high producing concrete block plant, operating in the name Burnet & Craig.

It is particularly fitting that the two boosters of the southwest, J. C. Burnet and B. M. Craig, should combine aggressive forces in an enterprise of this kind. Mr. Craig, before his entry in the U. S. Navy as a combat officer, was actively engaged in the construction industry, erecting large scale defense housing. Executed under Mr. Craig's direction, were many progressive ideas for short cuts and time saving in building detail. Mr. Burnet is known for his administrative and sales promotional ability, having had much experience in the operation of manufacturing enterprise.

This new plant is most strategically located in the Harrisburg section of Houston with building lines close to

*Vice-president and treasurer, Roy Darden Industries

Close-up of curing room bay entry, showing concrete roof sloping from center to the sides to prevent condensation dropping to block

right of way of U. S. Highway 75 to Galveston. While many plants have hidden themselves on obscure sites away from the public eye, the Burnet & Craig plant profits by its imposing location and eye appeal for advertising advantage.

Within a few feet of the heavily

travelled highway, the plant with its fully paved yard, provides easy access for the largest trailer trucks. Bordering the rear side of plant, and paralleling the highway, the plant is serviced with aggregates and cement in carload lots by both the Missouri-Pacific and MKT (Katy) railways. Approximately 400 ft. of spur track provide ideal car spotting flexibility for handling raw materials, and for loading the finished product into box cars only a few feet from yard stock piles. Designed in cooperation with the engineering staffs of Roy Darden Industries, Southwestern Division, Inc., of Dallas, Texas, the buildings were erected in the phenomenally short time of six weeks.

All-Welded Roof Framework

Of particular note, is the ingenious roof framework designed and installed by A. J. Foster of Houston. This was fabricated from 2 in. pipe with all connections welded. This material consisted of a combination of new pipe along with reclaimed oil field pipe, these being about the only suitable materials available in the area. The superior strength of this framing was admirably demonstrated by a load test when the 2500-lb. conveyor unit was suspended by chain falls from the bottom chord of 35-ft.



Concrete block machines operating in tandem with concrete fed from individual hoppers. Drag scraper conveyor elevates concrete from mixer to feed both block machine hoppers



View of plant from trackage side while construction work was being completed on boiler house. Boiler is gas-fired. Note housing covering bucket elevator, to the left

pipe truss at mid-point of span. A careful inspection of the truss during the test failed to reveal more than an almost imperceptible deflection. Roofing and siding consist of the conventional purlin system of small angles, and corrugated metal covering.

Curing rooms are constructed in short bay fashion with entry at right angles from either side of an ample width operating lane. Full advantage will be taken of the short bay rooms for closing and applying steam to the first filled bays early in the day or shift. The short bay room in turn, provides quick removal of racks in the first bay to provide immediate space for the next shift of operation. Total steam curing time and nomenclature of operation will be established from repeated laboratory tests and results of latest research on the subject of steam curing practice.

Curing Room Insulation

An interesting feature of curing room construction, is the roof design. The roof slab was constructed of light-weight, high-insulating concrete using scoria aggregate obtained from volcanic lava deposits in New Mexico. The soffit of roof slab is installed on a slope or pitch to each side of room from a higher ridge line along longitudinal center of room. This feature is intended to deflect drippings of possible condensation to sides instead of direct drip on the blocks. Sidewalls of curing rooms are 8-in. concrete block walls. Doors are designed to raise and lower with counterbalanced action.

Operate Block Machines in Tandem

A Rockercrete tandem block machine set-up was furnished complete with companion equipment. Rockercrete machines, feed hoppers, conveyors, mixer, aggregate bin, pallets, lift trucks, plant design and installation engineering service were supplied by Roy Darden Industries, Southwestern Division, Inc., Dallas, Texas.

The two "Rockercrete" machines are fed by a tandem hopper. Hoppers are

supplied by a single, especially designed conveyor transmitting the mixed batch from the 28-ft. mixer with equal distribution of material to each machine. The complete batch may also be discharged into one machine hopper if desired.

The 28-cu. ft. mixer is engineered and manufactured for Roy Darden Industries by the Link-Belt Co., Atlanta plant. Special features of this mixer include relatively silent link chain back-drive, 1½-in. thick replaceable liners, high motor mounting and V-grooved flywheel pulley.

Mixer charging is accomplished by volumetric batching from a steel, two-compartment aggregate bin. Cement is handled in bags from the cement house a few feet from mixer. Water, aggregate and cement control is so concentrated and convenient that only one man is required to handle the entire batching and mixing operation. Cement is received in car lots, and transported from box car to cement house on a short ramp. The relative floor levels of mixer charging platforms, cement house floor and box car are set to reduce the effort of cement handling to a very minimum. There is a slight slope from box car across platform to cement house and thence to mixer charging platform.

The aggregate is discharged from hopper or drop bottom railroad cars into feed boot of a Link-Belt bucket elevator which transmits material to aggregate bin. The bucket elevator is powered with a fully-enclosed gear reducer power head with power to spare in handling heavy aggregates as well as light.

The Rockercrete block machine incorporates the use of high horsepower vibration with leveling head top pressure designed to produce specification blocks of even density. Feed drawer and stripping action are accomplished with cushioned stroke, double-acting air cylinders. Complete control of the machine is effected by finger tip air valves and push button, reducing machine operator fatigue to a minimum.

Block transport system consists of

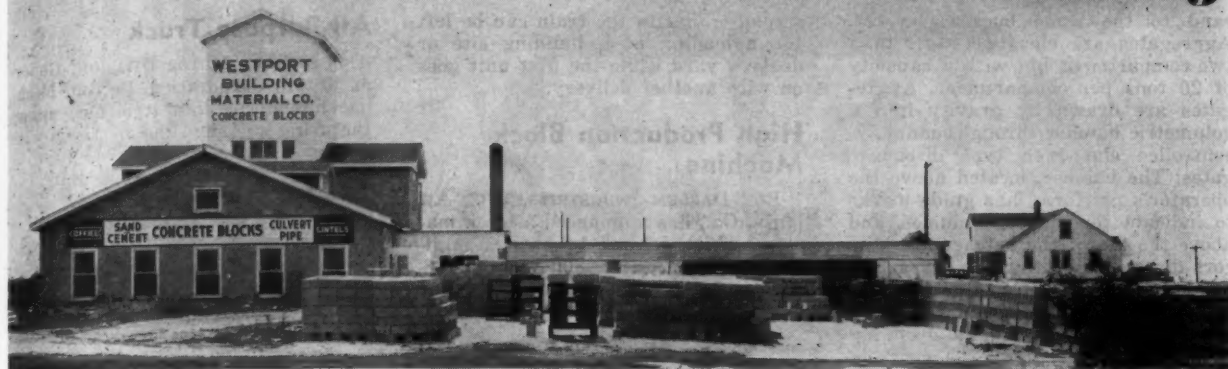
welded steel racks, carried by a pneumatic tired, lift truck from machines to curing rooms. Transport of hard blocks from rooms to yard is handled with motorized equipment. The racks are of 36-block capacity design with a three-layer arrangement to reduce offbearing slow-up on top layer.

Make Modular Sizes

Conforming with current trend, the modular two-core 8 x 8 x 16 in. block and companion partition block are being manufactured on the Rockercrete machines. This block measures 7½ x 7½ x 15½ in. actually, and compensates for a standard ¾ in. mortar joint to produce masonry coursing in even inches in all directions. A double central cross-web provides a cutting plane for ease in making halves on the job. All blocks are plain end for use at corners, jams and as stretchers, thus reducing brick mason time for hunting and classifying too many "specials" on the job.

Burnet and Craig plan to organize their operation for highest efficiency to produce as many units per day as other operators of the two machine Rockercrete setup report. Reports of such operators indicate a daily production from 3600 to 4500 8 x 8 x 16 in. units per day.

Many advanced ideas on sales promotion and merchandising are planned by the company. It is intended to specialize in the manufacture of light-weight, high-insulating nailable units. The Houston area has not majored in concrete block construction as much as some other localities, and with an intensive educational program, it appears that an impressively large market will be developed. Misconceptions concerning block construction will be removed, and building trades will learn how to correctly handle the product. Burnet & Craig will service projects on which their blocks are used, and will make it a point to provide information on concrete block construction for the benefit of builders who require information. Specialized research on lightweight aggregate combinations is to be carried on.



Overall view of concrete products plant. Aggregates are hauled up a ramp at higher level on the other side of plant

Mortar Cement With Air-Entrained for Water-tight Block

A NEWCOMER to the products field, but a veteran in the building materials trade, the Westport Building Material Co., Springfield, Mo., is producing concrete masonry units at a rate of 2000 per day. Experience in handling many types of materials for building construction has convinced this company that repeat business is only obtained by selling a quality product. Consequently, every effort has been made to produce a block that will not only satisfy the customer but will keep him coming back for more. Aiding materially in the production of a strong, tight block is the addition of about 10 percent mortar cement to the normal amount of air entraining cement to the mix. The added expense is well spent, in the opinion of the

owners, since it is felt that a quality product will encourage a continued market.

In addition to the rich mix, strict attention is paid to proper curing. Steam rooms are equipped with two steam pipes, one at each side of the room near the floor, with 1/16-in. perforations spaced at two-ft. intervals. Steam is introduced at 20 p.s.i. for a period of 12 hours to thoroughly saturate the units. After steam curing, the units are stocked on a concrete paved, outside storage area for at least three weeks to help insure proper hydration. Capacity for outside storage is 25,000 units.

Washed concrete sand and crushed limestone from 1/4- to 3/8-in. is used in a 60/40 ratio. Measurement of aggre-

gates is by volume system, cement is added by bag, and the extra mortar cement is weighed before introduction to the mixer. Water is measured in a 50-gal. tank with a calibrated gauge.

The plant itself is typical of the smaller type of concrete block plant, with an 18-cu. ft. Besser mixer, a Miles tamper and a Stearns Anchor tamper. Provision has been made in the plant layout for a third machine that will be added in the near future.

Aggregates are received by truck and discharged into two 30-ton capacity underground hoppers adjacent to the plant building. The coarse aggregate hopper has manually-controlled gravity feed to a bucket elevator, and the fine aggregate bin feeds by gravity to a short belt that conveys the

Below: Trucks dump aggregates into hoppers, in center foreground. Hoppers feed to boot of bucket elevator to bins

To the right: Three-way chute to direct concrete to three block machines



sand to the same bucket elevator. Aggregates are elevated 40-ft. to a two-compartment bin with a capacity of 20 tons per compartment. Aggregates are drawn by gravity into a volumetric batcher through manually-controlled clam-shell type discharge gates. The batcher, located above the operator's platform, has guide marks to indicate the various volumes, and above the top of the batcher are mirrors directed downward to reveal the inside of the batcher to the operator.

The batcher discharges to the Besser mixer, the mixed concrete dropping to a chute from which the concrete may be diverted three ways to two block machines and the proposed machine.

From the machines, block are handled to steam rooms on 50-block capacity wooden racks, transported by Yale & Towne lift trucks. Each of the four rooms has a capacity of 500 standard units. Steam is provided by a 15-hp. low pressure horizontal boiler fired by a Combustioneer stoker.

The concrete floor in the plant was constructed to slope $\frac{1}{8}$ -in. per ft. to the curing rooms and the concrete storage area to drop $\frac{1}{4}$ -in. per ft. to the back of the yard. This assists in easier movement of loaded lift trucks to the rooms and storage yard. Deliveries of cured units are made on a G.M.C. tandem, dual-drive, flat body truck that has a capacity of 450 standard units.

In addition to concrete masonry units, this company also handles concrete pipe and lintels, cement, sand and structural and reinforcing steel. W. G. Ruckle is president of the Westport Building Material Co., and George Rhodius is manager.

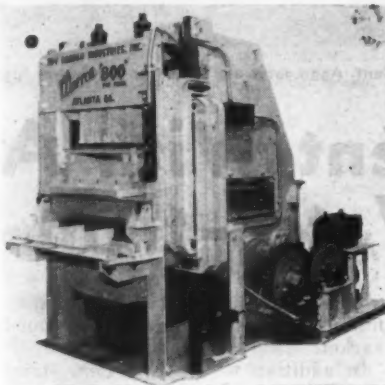
Trailer-Train for Block

LITTLE ROCK LUMBER & COAL CO., Alma, Mich., uses the tractor, semi-trailer and trailer train to haul concrete block within a radius of 100 miles from its plant. The Mack tractor pulling two Fruehauf trailers hauls up to 25 tons of concrete block on a single trip. Earle Brennehan and Vern Kennett, operators of the plant, point out several advantages for the trailer method of delivery. The trailers need not be tied up while tractors are being serviced, and the

second trailer in the train can be left for unloading at a building site or dealer's yard while the first unit goes on with another delivery.

High Production Block Machine

ROY DARDEN INDUSTRIES, INC., Atlanta, Ga., has announced a block machine which is said to have a minimum production of 800 standard 8-x-8-x-16-in. or equivalent block or



Block machine with a minimum production capacity of 800 block per hour

almost 10,000 concrete brick per hour. The machine, shown in the illustration, manufactures three 8-x-8-x-16-in. or equivalent block on one 9-lb. plain plywood pallet. It is said that it is only necessary to oil these pallets once every two weeks.

The machine is fully automatic with only one man at the front of the machine for offbearing. Syntro-magnetic vibration on the mold box and leveling head has been provided. The entire machine is operated with one 5-hp. gear-head motor plus agitator motor. It is claimed that the height of the block is held to $\frac{1}{32}$ -in. tolerance, and the heavy stabilizer on the leveling head provides a fully compacted, even density block.

One of these machines is now in operation in the Hamilton Concrete Products Co., plant at Chattanooga, Tenn. It is manufactured by the Link-Belt Co., Atlanta, Ga., plant under the Millard R. Warren patents, now pending.

All-Purpose Truck

CHEVROLET MOTOR DIVISION, General Motors Corporation, Detroit, Mich., has announced that it is now manufacturing a $\frac{3}{4}$ -ton line of trucks with



Three-quarter ton truck which is available in a number of models

full-floating rear axles and other advanced features. This truck is an all-purpose vehicle, and is available in a wide variety of models, including chassis, chassis and cab, pick-up, platform and stake bodies. It is powered by the Chevrolet Thriftmaster engine.

Respirator Hood

INDUSTRIAL PRODUCTS CO., Philadelphia, Penn., has introduced its lightweight respirator hood, weighing only 9 ounces. It incorporates a window



Full-vision respirator hood

assembly allowing full, unobstructed vision in all directions. The hood is made of close woven cotton cloth, extending down to the shoulders and provided with a draw string for pulling in at the neck if desired.

Concrete Floor Coatings

MEDUSA PRODUCTS DIVISION, Medusa Portland Cement Co., Cleveland, Ohio has announced the development of a line of floor coatings as a result of war-time laboratory research. It is claimed that this product is superior to its pre-war rubber-base paint for concrete which will be discontinued. It is said to give a very durable finish, it has a more beautiful appearance, and does not peel, chip or dust. The floor coating is available in light gray, tile red, green, brown, battle-ship gray, black and white.



Tractor-trailer train which can haul up to 25 tons of block

HINTS AND HELPS

Crusher Feed Control

BLUE RIDGE STONE CO., Blue Ridge, Va., has installed an electronic type control on a vibrating feeder to a crusher. Material feeds from an

Skip Box Loader

THE ACCOMPANYING ILLUSTRATIONS show a skip box and truck loading arrangement specially designed by the North Carolina Granite Corp., Mount

Making Mine Dust

BOTH mine dust and agricultural limestone are produced from the same quarry stone at the Ashcom plant of

Light Weight Analyzer

DOW CHEMICAL CO., Midland, Mich., is using a gas analyzer constructed of extruded magnesium tubing and plate and finished with aluminum

Traveling Crane for Pipe

FEHR CONCRETE PIPE WORKS, Eau Claire, Wis., has constructed a monorail overhead travelling crane to handle large precast con-

Batcher Power Transfer

MCCRADY-RODGERS CO., Pittsburgh, Penn., has had, for some years past, an installation whereby a 2-cu. yd. batch mixer was used to supply three

Climbing Turntables

QUARRY OPERATORS in this country will probably be interested in the way an English quarry keeps its trackage in good order in close proximity to blasting operations. The illustrations show the use of climb-

Turntable for Trucks

AT THE CRUSHED STONE PLANT of Stewart Sand and Material Co., Inmington, Mo., a turn-table per- cars has been constructed to dump old steam sh-

Screening Abrasive Rock

To solve the special problems of screening highly refractory and abrasive rock in the milling of various poultry grits and refractory gannister

CASH for your IDEAS

\$25 for each Hint and Help

Accepted for January 1947 ROCK PRODUCTS

Other Hints and Helps accepted subsequent issues paid for at highest regular space rate

The editors plan to enlarge the Hints and Helps section in the January, 1947, Outlook and Directory number of ROCK PRODUCTS. To make this plan an outstanding success, \$25 prizes are offered to operating men, for each accepted contribution for this department, in the January issue, describing an original production idea. Highest space rates will apply for all other contributions published in subsequent issues.

By just thumbing through the Hints and Helps section in any issue of ROCK PRODUCTS you can readily see the types of original ideas—some that may even seem on the surface trivial to you—that have been contributed by other operating men.

No elaborate work is required. Just take a glance around your plant to discover and review some

of the "kinks" that you have developed and which may even have taken for granted or forgotten. Then, write a brief description and send it along accompanied by photographs, blueprints or even pencil sketches. The editors will whip it into shape for publication. Improvised details or major unique developments having to do with any phase of plant operation are eligible for consideration.

There is no limit to the number of entries that may be submitted for consideration since each one will be judged individually on its merits, for the purpose of selection for publication in the January issue. Contributions need not be identified with you or your company if you so specify. The final deadline is December 2, but we would prefer earlier contributions because it takes time to work them up.

Address all entries to:

ROCK PRODUCTS

309 W. Jackson Blvd.

Chicago 6, Illinois

California Producers Meet in Oakland

DECONTROL from OPA pricing, shortage of masons, area price control orders and other vitally interesting problems were discussed at the meet-



G. F. Steigerwalt

ing of the Northern California Concrete Masonry Association which was held at the Leamington Hotel in Oakland on September 27.

President Steigerwalt called the meeting to order with 76 in attendance. Distinguished guests included: Deane Lynde, president of the National Concrete Masonry Association; E. W. Dienhart, executive secretary of the National association; E. P. Ripley, president of the Concrete Masonry Manufacturers Association of Southern California; and J. H. Vollmer, secretary of the Southern California association.

National conditions respecting the concrete products industry were discussed by Deane Lynde at the invitation of President Steigerwalt. President Lynde also pointed out the advantages of membership in the national association.

Secretary E. W. Dienhart of the national association discussed various problems with which the industry is confronted, and said that he did not believe the industry could expect decontrol from OPA price regulations in the near future, and recommended that no attempt be made at this time to secure decontrol for the industry. He cautioned against too great an increase in plant capacity as he believes the present total capacity in the nation is very nearly sufficient. Secretary Dienhart pointed to the need for more masons and for lower costs in building concrete masonry homes because even though the price of concrete masonry units has not been increased, the cost of laying these units in the walls has been increased several fold.

Replying for labor, J. S. Mazza, business representative of the Bricklayers Union No. 7, San Francisco, and D. E. Leonard, business representative of Bricklayers Union No. 8, Oakland, described the efforts being made to increase the number of apprentices in the masonry trade. A. G. Streblow of Basalt Rock Co., stressed the very serious need for additional masons and said that quality of workmanship and quantity of work done is very unsatisfactory. Mr. Mazza replied that there is no policy on the part of the Unions to reduce the amount of work accomplished by masons in any given time, but, he pointed out, there is naturally a difference in the ability of various masons.

E. P. Ripley, president of the Concrete Masonry Manufacturers Association of Southern California, told of the work being done by his group. He was followed by J. H. Vollmer, secretary of the Southern California association, who spoke encouragingly of the increased prestige of concrete masonry in Southern California as a result of recent tests of reinforced concrete block walls.

George Nesbitt, of the District office of OPA, gave a resume of the various orders which have been issued by OPA that affect the concrete block industry, including the recent Area Price Control Order for heavyweight concrete block. A. G. Streblow offered a motion which was accepted that the officers of the Northern California Concrete Masonry Association be authorized to take such steps as developments make necessary to act with the OPA and CPA and other governmental organizations in behalf of the association. George Alden of Chas. R. Watson Co., gave a short talk on the benefits of air-entrainment in concrete block manufacture.

Northwest Block and Pipe Men Meet

CONCRETE PIPE AND PRODUCTS ASSOCIATION held its Fall meeting in Seattle, Wash., September 21. Seventeen members were in attendance at the business meeting which preceded an evening dinner meeting.

C. M. Howard, engineer for the association, reported the following activities: A corporation in Des Moines, Wash., has been formed to manufacture Wells concrete block and equipment for production of these products. Sound transmission tests of different types of masonry are to be made in collaboration with a Seattle architectural firm. Mr. Howard also told about the results of culvert tests conducted recently by the Washington Department of Highways.

R. W. Condon described in detail the sand bearing tests made by the state highway department on a 72-in., 6 ft. long XR concrete culvert pipe at the Graystone Concrete Products Co., plant in Seattle. He described the

placement, framework, method of loading, and the results of the 216,000 lb. load test.

One of the subjects most widely discussed was the new specifications set by the Washington Department of Highways for tongue and groove pipe. Mr. Howard reminded the members that the new specifications called for placement of a single wire in the tongue of reinforced culvert pipe. Considerable discussion resulted in no conclusion being reached as to the proper length of a culvert tongue, it being brought out that the amount of slope on the pallet will largely determine the thickness of both the tongue and groove. Mr. Bergren moved that a committee be appointed to study tongue and groove thicknesses for culvert pipe and, after making an analysis of the members' suggestions, be given the power to act and present to the highway department of the state the association's recommendations.

At the dinner meeting, Deane R. Lynde, president of the National Concrete Masonry Association, and E. W. Dienhart, executive secretary, addressed the meeting. Mr. Saunders of the Seattle office, Portland Cement Association, urged producers to secure an architect to submit plans in the current "Small Homes Contests." Mr. Lynde pointed out that production of concrete masonry in 1946 will double the units produced in 1941, a record year. Mr. Dienhart told about his work with federal agencies, and urged the industry to concern itself with improving and merchandising its products. He also referred to the work of R. E. Copeland who heads a newly-created technical division.

The following were in attendance at the meetings: F. M. Kettenring, Seattle, president of the group; R. E. Metzger, Centralia; Harry Roberts, Centralia; Wm. Judah, Shelton; R. W. Condon, Seattle; John Williams, Bellingham; R. E. Goodrick, Olympia; W. S. Wilson, Olympia; Lars Anderson, Seattle; F. C. Strange, Port Angeles; Earl Bracken, Aberdeen; Homer Bergren, Seattle; Ben Saunders, Seattle; James Sullivan, Bremerton; Edward Lowry, Seattle; G. P. Duecy, Everett; C. M. Howard, Seattle; W. F. Paddock, Seattle; Mr. and Mrs. Swenson, Everett; C. W. Hatfield,

Block Plant Fire

FRED JOHNSON CEMENT BLOCK AND COAL CO., Duluth, Minn., suffered a loss of \$30,000 when the plant was recently partially destroyed by fire. In addition to almost complete destruction of the building, a Besser Super Vibrapac was lost and also other equipment.

LESLIE WATERS, St. Helens, Ore., has installed a ready mixed concrete plant adjacent to his rock crushing plant.

AN UNUSUAL WATERPROOFING PROBLEM:

Holding Back a 4^{ft.} High Tide IN AN ELEVATOR PIT!

The PROBLEM: To control water seepage in the elevator pit of the Barnum Garage, Bridgeport, Conn. Located directly over an old river bed, the pit daily filled with water up to four feet when the tide came in. Continual seepage caused

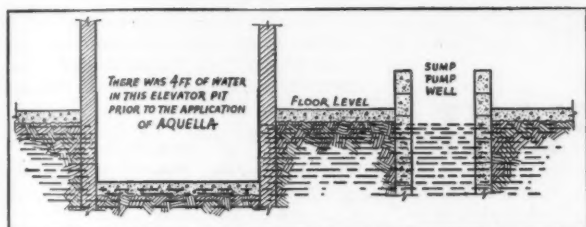
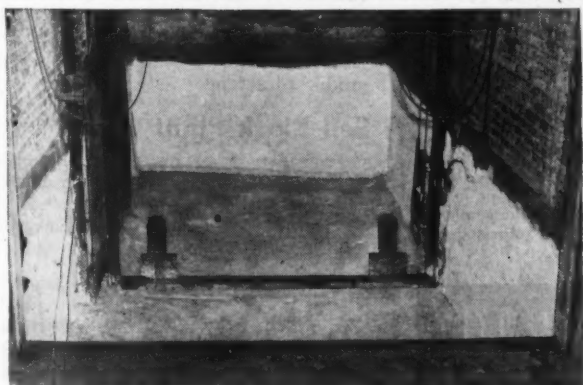


Diagram illustrating the problem.

cables and mechanism to rust; breakdowns were frequent. After so-called "waterproofing paints" were proven ineffective, a three-foot-in-diameter sump pump well was installed with an oversized pump, having a two-inch main. The pump worked constantly; literally it was pumping a river. But even this did not work, because of mechanical and electrical failures.

The SOLUTION: The application of AQUELLA



The elevator pit after it was treated with Aquella in January, 1945. According to L. Levitt, garage operator, it hasn't leaked since it was Aquellized 20 months ago.

The RESULT: As Mr. L. Levitt, operator of the garage, describes it: "Since January 1945, when the elevator pit was Aquellized, we have had the sump pump disconnected—even though the water in the sump pump well rises up to the cellar floor level. This proves that the floor and walls of the pit are surrounded by water held back by Aquella."

The REASON

for Aquella's effectiveness in holding back a 4-ft. high tide in this elevator pit centers around the

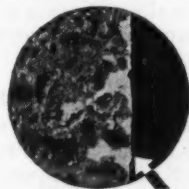
entirely new principle on which it works...a principle that distinguishes it in *three ways* from the so-called "waterproofing paints."

First, the ingredients of which Aquella is composed are so *finely ground* that they penetrate the masonry *intensely* to fill and close the most microscopic pores. Second, Aquella



The sump pump well is no longer used. Pump was disconnected months ago. Water still rises to the floor level as can be seen in the above photograph—proving that the floor and walls of the pit are still surrounded by water held back by Aquella.

is scrubbed into the face of the masonry—not just "brushed on" to coat the outside surface. Third, Aquella has an exclusive chemical property which causes it to expand and set up a harder, firmer bond when water contacts it.



Photographic enlargement of a small, sawed-away section of a concrete masonry unit showing the way Aquella penetrates to fill and close the pores of the surface.

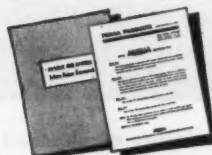
As it cures, Aquella leaves a beautiful white finish that does not powder, peel, flake or rub off, and can be painted over with any color.

Specify AQUELLA for the treating of all porous masonry surfaces, such as brick, concrete, light weight masonry units, stucco or cement plaster.



PRIMA PRODUCTS, INC.

Dept. A5, 10 East 40th Street, New York 16, N. Y.



FREE Write today for your copies of "Aquella and Concrete Masonry Construction," and the "Key to Aquella Specification Types."

AQUELLA

**1000 BLOCKS
AND UP
per 8-hour day**

with this



COMPLETE KENT PLANT

HERE, at an attractive price, is the ideal outfit with which to launch a new business or expand present facilities.

Buy this complete *motorized KENT plant. Install the various coordinated machines in compact space guided by the simple and explicit instructions furnished. Everything needed is included.

Then you will be ready to make concrete products with equipment that has a record for practical and profitable production in plants throughout the country.

At less than the usual manpower cost the KENT *Continuous Mixer delivers well-mixed concrete in a steady stream to the KENT Elevator which raises it to the KENT Feeder. From this the concrete flows into the easily operating KENT Stripper. The pull of a lever brings the KENT Tamper into operation for speedy tamping of dense block. The lever-operated hopper "strikes-off" the blocks smoothly. It is then raised by an easily operated lever and swung to one side on the "off-bearer". At the right of the stripper stands the KENT Dunker which keeps pallets constantly in fine condition. Not illustrated but furnished are 1000 pallets, 25 three-deck curing racks and a Weld-Built lift truck.

*Larger KENT plants are available; also units for belt drive and combinations having the KENT Batch Mixer, instead



of the Continuous Mixer. Use the coupon below to obtain any desired information quickly and easily.

The **KENT MACHINE COMPANY**

Manufacturers of CONCRETE PRODUCTS MACHINERY Since 1925

CUYAHOGA FALLS, OHIO, U.S.A.

Send complete information and prices as checked below.

- ☐ Plant illustrated above ☐ Plant with Batch Mixer
☐ Plant with belt drive ☐ Larger Complete Plants

Name Address
R. P. City

Cement Production

BUREAU OF MINES reports that production of finished cement during August, 1946, totaled 16,213,000 bbl. or 63 percent greater than that reported for August, 1945. Although 79 percent of capacity was utilized, production did not meet demands and mill stocks continued to decline to an August 31 total of 9,322,000 bbl. This represents a decrease of 42 percent from that reported in the corresponding month of the previous year. Mill shipments of 17,955,000 bbl. were 87 percent greater than those reported for August, 1945. Demand for cement, as indicated by mill shipments, in August 1946, as in the previous months, was higher than the corresponding months of 1945, in all districts of the United States and in Puerto Rico, but was lower in Hawaii. The increases range from 13 percent in California to a maximum of 112 percent in Kansas.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of August, 1946, and of August, 1945.

		RATIO (PERCENT) OF PRODUCTION TO CAPACITY				
		Aug. 1946	Aug. 1945	July 1946	June 1946	May 1946
The month	...	79.0	49.0	75.0	73.0	59.0
12 months	...	59.0	40.0	56.0	54.0	51.0

Pipe Regional Meetings

REGIONAL MEETINGS of concrete pipe manufacturers have been held in a number of areas. Northeastern Concrete Pipe Association held meetings on August 29 and 30 at Albany, N. Y. The Executive Committee of the American Concrete Pipe Association also met in Albany on August 30. Those present were President Elmer L. Johnson, Colton, Calif.; Past-president, O. H. Miller, Memphis, Tenn.; Secretary, E. H. Fox, Cincinnati, Ohio; and Director H. H. Dickehut, Austin, Texas. Vice-president H. Eschenbrenner of Columbus, Ohio was unable to attend.

Sell Block Plant

FREEMAN LANCASTER, Everett, Wash., has sold his concrete products plant at First Avenue and Avenue E to William H. Berry of Blackman Lake, Wash.

Enlarge Block Plant

LARSON BROS., Rockford, Ill., has spent \$125,000 enlarging their plant facilities, including the installation of a new block machine. Production prior to the installation of the new machine was 4000 block per day and 15,000 concrete brick.

FOSTER AND LOVELAND, North Lewisburg, Ohio, are manufacturing concrete block.

SAM LEVIN has purchased the concrete block plant near Casstown from Edward Bowman, Jr.

IT'S TIME TESTED . . . CONCRETE AND SANDLIME BRICK MACHINERY

J & C



Model A Brick Press makes 60 bricks per minute, 28,000 bricks per 8-hour day. (Smaller Model NC press makes 30 bricks per minute, 14,000 bricks per 8-hour day.)

J & C sand lime brick machines in use 35 years are still making quality bricks every day. The present models are worthy successors to our rugged, earlier models.

OUTSTANDING FEATURES OF J & C BRICK PRESS

Automatic operation, uniform filling of mold pockets, feed synchronized with table movement, adjustable feed, mold depth regulator, hardened saw steel mold liners, slow moving parts, long-lived, automatic tablestop for removal of brick and shear pin prevents overload.

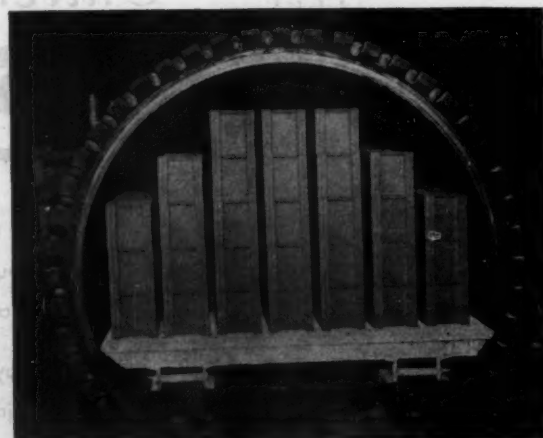
FOR BETTER BRICK

Lean mixes, higher strengths, low absorption, sharp corners and edges, troweled end and sides, fine textured surface, uniform appearance, accurate sizing, handle easy—lay fast.

Step Up Deliveries to Meet Demand with J & C High Pressure Steam Kilns

With demand for brick and block at a record high, pressure curing insures quick delivery, steps up quality, reduces heavy investment in stock piling.

J & C's long experience in pressure curing, backed by hundreds of installations, insures best possible steam kiln design for your post-war plant. J & C steam cured brick or block is free from spalling, crazing, checking, leaching, efflorescence, volume changes, expansion or contraction when laid in dry wall.



WRITE FOR COMPLETE INFORMATION

JACKSON & CHURCH COMPANY • SAGINAW, MICHIGAN

New Concrete Products Plants

NEW ENTERPRISES for the manufacture of concrete products, according to regions, follow:

Great Plains States

CEMENT PRODUCTS Co., Neodesha, Kans., has started production of concrete block, brick, tile, silo staves and other concrete products. Capacity of the plant is 1000 block per day. Owners are A. L. Talbert and Charles Killion.

CONCRETE PRODUCTS Co., St. Francis, Kans., has started producing concrete block, burial vaults, drainage tile and precast joists, lintels, etc. John Hancock, returned veteran, is the owner.

WAYNE SEIP AND FRANK CASON have opened a concrete block manufacturing plant at Marysville, Kansas. The block machine was designed by Mr. Seip.

DONELAN CEMENT PRODUCTS, INC., Salina, Kans., has completed construction of a plant for the production of concrete brick and block.

THOMAS A. WALLACE has started a concrete block plant in Alliance, Nebr., that produces 500 block per day.

JAKE OBLANDER, Marion, Kans., has started manufacturing concrete block.

Midwestern States

VALLEY CONCRETE BLOCK Co., Spring Vale, Ill., has started production of concrete block in various sizes and colors. Pat Mahoney, Jr. and Hubert Arnold are the owners. Capacity of the plant is 1000 blocks per day.

BLUFFTON CEMENT BLOCK Co., Bluffton, Ohio, is manufacturing a concrete brick-block made of cement and limestone. Ben Amstutz and Sons have incorporated the company for \$100,000 with \$56,000 paid-in capital.

WETZSTEIN CONCRETE Co., Lake View, Iowa, manufacturers of concrete culvert pipe, block and tile, has changed its firm name to Lake View Concrete Tile Company.

R. J. SEYBERT of Dodge City, Iowa, is planning to move his vermiculite concrete block and brick plant to Johnson, Kans.

Northern States

DON COLE AND ED NASON, returned veterans, Cass Lake, Minn., have started manufacturing concrete block and other building materials.

RUSSELL BLACK has set up a concrete block plant in Elroy, Wis.

MARCO RUPPE of Ironwood, Mich., is manufacturing 1800 concrete block per day in his enlarged plant, and plans to produce 20,000 concrete brick per day.

CLARENCE AND BARRETT RAAUM have opened a plant in Crosby, N. D., for the manufacture of concrete block, tile, culverts and other concrete products.

VICTOR WEAVER of Nye, Wis., and **A. M. BAKER** of Wanderoos, Wis., are operating a concrete block and brick plant in Amery, Wis.

NORMAN ALLERS AND HARLEM WIRBUSCH have opened a concrete block plant in Lake City, Minn. Capacity of the plant is 1000 block per day.

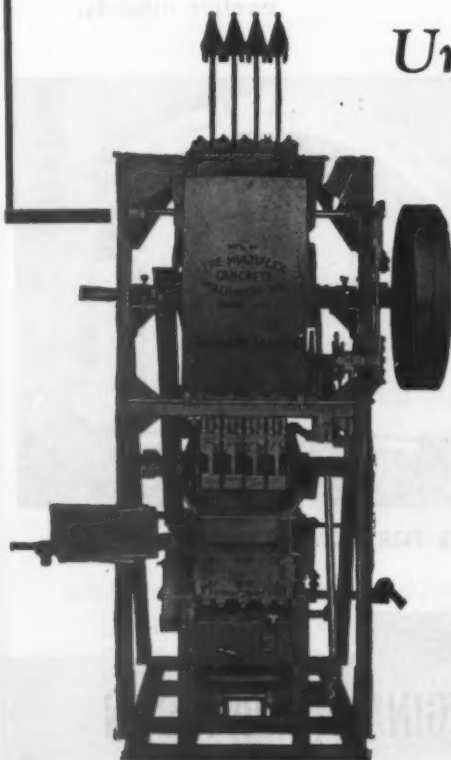
Pacific Coast States

SMITHWICK CONCRETE BLOCK Co., Portland, Ore., has been organized by S. Carl Smithwick of Spokane, Wash., and Paul P. Klemens of Alpena, Mich., for the production of concrete block. Capacity of the plant is 4800 concrete block every eight-hour shift which will be stepped up to 12,000 block later.

SACRAMENTO PUMICE BRICK & TILE Co., Sacramento, Calif. produces 6000 lightweight pumice concrete block per day. Frank R. Hamblet is president and manager of the plant.

SNOQUALMIE VALLEY CONCRETE WORKS, Snoqualmie, Wash., is the

A LOW PRICED UNIT THAT IS A REAL PROFIT MAKER



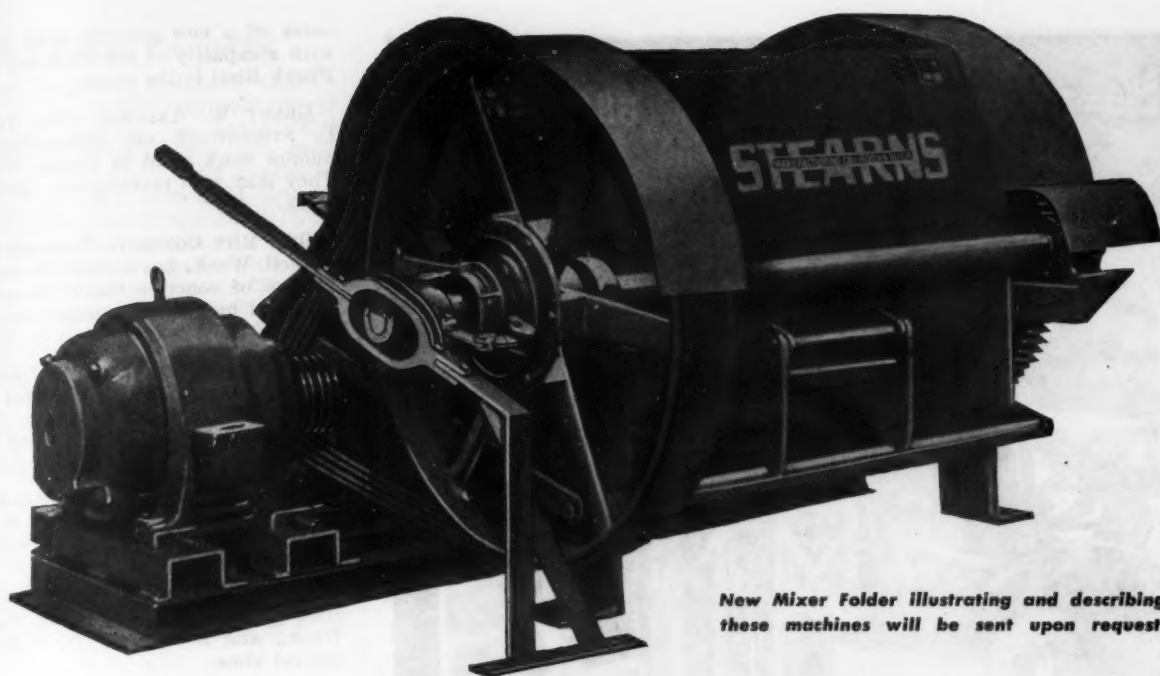
Universal Type **MULTIPLEX** **STANDARD TAMPER**

"Old Reliable" itself, this economical machine which produces three to four 8"x8"x16" blocks of uniform high quality every minute day after day with minimum maintenance.

It may be purchased as a hand-operated stripper and strike-off machine which can be converted into a power-operated, semi-automatic machine later. It is supplied with either 4 or 8 tamping bars. Write for complete catalog today!

MULTIPLEX CONCRETE MACHINERY CO.
ELMORE, OHIO

Specializing in Satisfactory Service Since 1906



New Mixer Folder illustrating and describing these machines will be sent upon request.

STEARNS MIXERS

**Not a "Boom-born" Product, but
PROVED through Years of Experience**

*Plant after plant has ordered its second, third, fourth and
fifth machine . . . one profitably operates as many as eighteen.*


When buying remember these STEARNS Advantages:


- **LOWEST CHARGING HEIGHT:** saves time, fatigue.
- **LOWEST MAINTENANCE:** wear-resisting, removable, quickly shifted liner bars and adjustable "Sterloy" mixing blades cut maintenance costs.
- **DISCHARGE DOOR** opens easily, locks tight, won't leak.
- **CONVENIENTLY LOCATED DOOR CONTROL** saves time, waste motion.
- **BEARINGS:** Self-aligning, anti-friction, dustproof.
- **DRUMS OF STEEL PLATE** welded to heavy heads.
- **OFFERED IN FIVE CAPACITIES:** 12, 18, 28, 42 and 50 cu. ft. with pulley, V-belt or Gear-head motor drive. Larger sizes to order.
- **NOW AVAILABLE** for reasonably prompt delivery.

STEARNS

GENE OLSEN, PRESIDENT

Designers and Manufacturers of Vibration and Tamp-Type
Blockmakers . . . Mixers . . . Skip-Loaders . . . Yardhoists

GRAVELEY

MACHINES

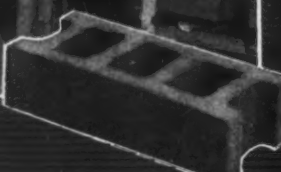


Reach NEW HEIGHTS in PRODUCTION and QUALITY

Operators old and new are stepping up production and improving the quality of their blocks and increasing profits thru Graveley "Better Built" Concrete Block Machines.

Put a Graveley to work for you. One machine makes eight sizes of blocks, a truly versatile, practical money-making machine. There are two models, a 2-cell and a 3-cell, both two unit jobs. Two Graveley machines operating from a single mixer and conveyor will produce well over 3,200 blocks a day.

Put this Graveley job to work for you. Provide for every possible customer demand in both style and size range of block.


BOB GRAVELEY INDUSTRIES, Inc.
 ORLANDO, FLORIDA
GRAVELEY-BETTER BUILT-MACHINERY



FARREL-BACON

CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

FARREL-BACON
 ANSONIA, CONN.

name of a new concrete block plant with a capacity of 800 block per day. Frank Rizzi is the owner.

GRANT W. ANDERSON and HARRY L. STIGENWALT are constructing a pumice block plant in Renton, Wash. They may also manufacture concrete block.

BILT RITE CONCRETE PRODUCTS Co., Bothell, Wash., has started the manufacture of concrete block. The plant is owned by Gaard Strumme and his son, Anthony.

THE CROSBY-HAAPA CEMENT BLOCK Co., Hoquiam, Wash., has started the manufacture of concrete block. Jack L. Haapa and Allen M. Crosby are the owners.

SOUND BLOCK Co., Bothell, Wash., is now producing concrete block. T. D. Montgomery and W. J. Knight are the owners.

CHARLES WALTER has started a concrete block plant near Metaline Falls, Wash., and is turning out block in several sizes.

Southern States

LINVILLE'S BUILDING PRODUCTS Co., Wilson, N. C., will have its concrete block plant in operation shortly. A new Stearns Model A plant has been installed to produce concrete block and other concrete products. J. Burch Linville is the owner and proprietor, and Odell J. Evans is plant superintendent.

TRI-STATE CEMROC Co., Covington, Ky., has been purchased by Dennis Tarvin, Oakley, Ky., for the production of cinder block, concrete block, foundation moldings and other building material.

Eastern States

RICHARD L. MILLER, returned veteran, has started the manufacture of concrete and cinder block in New Hope, N. J. He is also supplying sand and gravel for building purposes.

RAOUL DUCHARME, manufacturer of concrete and cinder block in Springfield, Mass., has been authorized to build a \$10,000 cinder block plant.

JOHN A. GROVE has purchased the concrete block plant in Toms River, N. J., from James Citta.

Rocky Mountain States

WESTERN DISTRIBUTORS, INC., Butte, Mont., is the name of a new concrete block plant owned and operated by five ex-servicemen, Emmett Sullivan, Jack McCaw, Dan Lavelle, Joseph Casne, and Sam Babich.

LESTER THOMPSON, war veteran and president of the Thompson Holding Co., Red Wing, Minn., has announced plans for the establishment of a concrete block plant to produce 5000 block per day, in Wacouta township.

Sell Cement Property

THE MISSOURI PORTLAND CEMENT Co., St. Louis, Mo., has sold its old Rosedale yard in St. Louis. This three-acre property was for more than 50 years one of the company's main St. Louis outlets. S. M. Osborn, general manager of the Insull Wool Insulating Co., bought the entire property, but sold part of the land and a one-story building to the Alox Manufacturing Co. The insulating company plans to erect a 20,000 sq. ft. plant and warehouse on the remaining area.

Low Gravel and Stone Bids

MAKINS SAND AND GRAVEL Co., Oklahoma City, Okla., with a low bid of \$3.50 a ton on gravel received the Oklahoma City contract to supply gravel for two city reservoir lakes. Earl W. Baker Co. obtained the contract for rip-rap with a bid of \$4.95 a ton.

Halt Gypsum Sheath Output

NATIONAL GYPSUM Co., Buffalo, N. Y., announced on August 13 that it had ceased production of gypsum sheathing and substantially reduced its output of gypsum lath because of "unfavorable" price ceilings. President Melvin Baker is reported to have said

that his company would be forced to sell gypsum sheathing at practically no profit under present price ceilings. Production will be concentrated on ordinary wallboard. The O.P.A. price of wallboard was \$25 a thousand board feet; the same price as sheathing, but the cost of sheathing was \$4 a thousand more.

Buys Tug

THE WARNER Co., Philadelphia, Penn., has purchased a tug for use on the Delaware river. The tug, purchased from the government as surplus property, was located at Madisonville, La., and had to travel by way of the Gulf of Mexico and the Atlantic to destination.

Open Ready Mix Unit

CHARLES WEVER has opened a ready mixed concrete plant at Corning, Iowa. Mr. Wever was formerly assistant county engineer of Montgomery County.

Sell Sand Firm

ACE SAND AND GRAVEL Co., Dishman, Wash., has been sold to John M. Cowan and George G. Krause by Fred E. Backlund for a reported consideration of \$100,000.

GREENVILLE CEMENT PRODUCTS Co., Greenville, Calif., is now producing lightweight concrete block, according



"ANCHOR"

Complete

EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Stearns Clipper Stripper Machines; Stearns Jolteret Machines; Stearns Mixers; Cast Iron and Press Steel pallets. Straublox Oscillating Attachments, etc.
Repair parts for: Anchor, Stearns, Blystone Mixers and many others.

Anchor Concrete Mch. Co.

1191 Fairview Ave., Columbus 8, Ohio

READY

- FOR LONG SERVICE
- FOR HIGH PRODUCTION..
- TROUBLE-FREE OPERATION
- EDGAR'S VIBRA - SHAKER BLOCK MACHINE



Price
\$800

With Partition Change-over \$100 Extra.

This sturdy block-making machine is ready to go to work for you when you receive it, ready to start fast, steady production of uniform blocks at low operating cost.

The Edgar Single Unit Vibra-Shaker, with its partition change-over, makes two 8 x 4 x 16 partition tiles of excellent uniform texture in a single operation.

Edgar's Block Machine Works can give you immediate delivery on the Edgar Vibra-Shaker. Wire or write us for full details.

EDGAR'S BLOCK MACHINE WORKS
ORMOND • FLORIDA

Guaranteed

pallets

We manufacture the "WELL-BUILT" Aluminum-Copper Pallets.

*Each pallet carries our standard replacement GUARANTEE.

Deliveries an almost all types of 8x8x16 and 4x8x16 can be made immediately. Special sizes can be made in approximately 2 weeks.

Increase Your Production

Use the LIGHTER, STRONGER, GUARANTEED "WELL-BUILT" pallets, made of Aluminum-Copper.

Wire, Write, Phone

SOUTHEAST STEEL SALES COMPANY

100 W. Amelia

P. O. Box 299

Orlando, Fla. Telephone 2-1442

Write for dealer territories

Orders from foreign countries also receive prompt attention

PROFIT POINTERS for Concrete Block Makers!

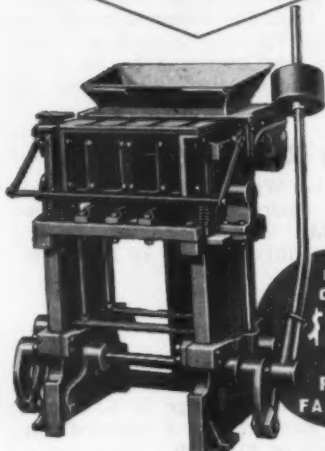
**Built to
Last**

The APPLEBY "LITTLE GIANT" Vibrator's compact, rugged construction survives the challenge of hard, every-hour production.

Precision machining and expert assembly guarantee smooth, easy, LOW-COST action and speedy production. The "LITTLE GIANT" turns out from 100 to 120 large 8" x 8" x 16" blocks per hour, frequently more.

The "LITTLE GIANT" is the logical, ideal machine to buy NOW as permanent replacement for old machines frayed and broken in the war-time rush. The "LITTLE GIANT" does away with waste—it's a PROFIT-PRODUCER!

**APPLEY
"Little Giant"
Vibrator**



FOR
ONLY
\$995.
FOR
FACTORY

**8 Block
Sizes**

Eight sizes of blocks are moulded day after day in this profit-producing machine. Its mould box forms perfect, uniform-density-blocks with an action of SIX THOUSAND MECHANICAL VIBRATIONS PER MINUTE. Vibrating mould box and stationary, interchangeable cores assure perfectly cut, smoothly faced blocks. Block size change-over is simple, quick.

Precision made, the "LITTLE GIANT" is of cast iron and steel; has absolute minimum of wearing parts. Mould box lined with manganese steel to balk abrasion. Minimum time loss, too, from changing parts, cores.

PROMPT
831 NINTH STREET NORTH

J. W. APPLEBY & SON, Inc.

DELIVERY
ST. PETERSBURG 4, FLORIDA

Manufacturing MORTARLESS Interlocking Concrete Blocks

(Laid Without Mortar)

- Hydraulic-Powered or Hand-Operated Machines

- No Tamping; No Vibrating
- Interlocking Units Lay Up Perfectly
- Exclusive Territorial Franchise Protects You Get the Facts Today!

Mortarless Tile Machine Co., Inc.

2623 Riverside Drive Los Angeles 26, Calif.



P
A
T
E
N
T
E
D

PAYS FOR ITSELF IN 5 DAYS!

LITTLE DAVE BRICKMAKER

WRITE TODAY FOR
THE FACTS

Mass production at low cost is the secret to handsome profits. A simple operation, by unskilled labor, produces 7 standard size quality brick at a time. You can turn out 3500 brick in a single day with LITTLE DAVE.



ALSO THE NEW
VI-BRIK-CRETE
AVAILABLE
IN LIMITED
QUANTITIES

R. S. Reed Corporation

East Hoffman St.
THREE RIVERS, MICHIGAN

ERICKSON POWER LIFT TRUCKS

STAMINA

SPEED

MANEUVERABILITY

Pneumatic tired, low and high lift fork trucks—platform trucks.



No paved runways needed—Speedy hydraulic platform raiser—Simple controls. Write for complete details.

ERICKSON SPECIAL EQUIPMENT MFG. CO.

1401 MARSHALL ST. N. E.

MINNEAPOLIS 13, MINN.

CONCRETE BURIAL VAULTS

AMERICA'S FINEST, HOLDS AND LOWERING DEVICES



TERRITORY FRANCHISES

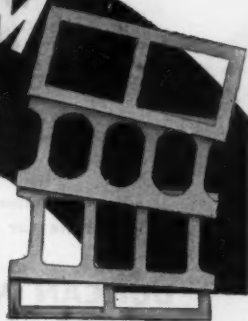
BERG VAULT CO.

EQUIPMENT DIVISION

1900 LUCAS HUNT RD. ST. LOUIS 20, MO.

ALUMINUM PALLET

NOW is the time to
insist on V-LINE PALLETS
for your new block ma-
chine.



Nearly all block plants would like to have a really satisfactory aluminum pallet; due to ease of handling, less block breakage, lower shipping costs, etc. V-LINE pallets in many sizes sell for less than iron pallets, yet always retain 30% of original value in aluminum.

Wide and enthusiastic acceptance of this super-strength pallet by the industry, plus our expanded mass production facilities, have kept cost down and deliveries up. Write, wire or phone for new price list.

FLORIDA DIE CASTING FOUNDRY
PHONE 2-1838 • ORLANDO, FLORIDA



- ★ KISSAM-BLATT "Controlled Oscillation" BLOCK MACHINE
- ★ No. 12 BLATT MIXER
- ★ No. 1220 BLATT CONVEYOR
- ★ No. 3 BLATT FEED HOPPER
- ★ BLATT WATER CONTROL UNIT
- ★ LIFT-TRUCKS ★ PALLETS

Write • Wire • Phone
for FREE INFORMATIVE BOOKLETS
AVAILABLE NOW

FRANK I. BLATT SALES CO., INC.
Rattlesnake, Florida Phone (TAMPA) H-4811



TO MY FRIENDS IN THE CONCRETE MASONRY INDUSTRY:

All over the country we see buyers accepting sub-standard materials because so often quality products are not available. Certainly a day of reckoning is not far off.

Fortunately, our industry can protect itself against this loss of good will and future markets. Whether a plant produces 500, 5,000 or 50,000 block per day, it is practical, with reasonable expenditure, to insure quality block.

We know that this is true because in our plant we are producing and selling more than 35,000 block per day, every one of which meets standard specifications including moisture content limitations. Even though buyers would take any kind of inferior block, we refuse to lower our standards.

To insure meeting rigid requirements, we have equipped our plant with:

- Cinder stain analyzing unit to insure quality aggregates;
- Control of aggregate grading;
- Toledo dial scales for weighing all ingredients;
- Two 100 h.p. high pressure boilers for high temperature curing and drying;
- Covered storage for more than 250,000 units;
- 150-ton testing machine for strength tests;
- Electric drying oven for absorption tests;
- Humidity and temperature recorder for curing rooms.

A well equipped laboratory in charge of a competent technician has been erected, and all test results are regularly checked by a commercial laboratory. Test reports on current production are furnished to architects and builders.

An inspector is stationed at block machines to check water content, texture and dimensions. Result is less than 150 culls per day with daily production of 38,000 to 42,000 block.

Our industry never had a better opportunity to insure future business than by guaranteeing quality block in the present seller's market.

Yours for a better, stronger, and more prosperous concrete masonry industry.

PHILIP PAOLELLA
Vice President, Plasticrete Corporation

The above letter tells how and why the Plasticrete Corporation, Hamden, Conn., maintains quality. Last month Jay C. Ehle, Cleveland Builders Supply Co. told concrete products men how his company maintains quality. Messages containing other practical ideas from leaders in the industry will follow in early issues.

PORTLAND CEMENT ASSOCIATION

Dept. 11-45, 33 W. Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of concrete
... through scientific research and engineering field work

Better Blocks—Lower Cost With **COMMERCIAL**



*Close Clearance
Pressed Steel
PALLETS*

- ★ Clearance to $\frac{1}{4}$ in. of sides of mold box means sharp edges, even with finest aggregates.
- ★ Maximum rack and kiln capacity. Cored pallets designed for each unit made.
- ★ Lighter weight. In normal day's operation, Commercial

cored pallets saves 44 tons of moving compared with cast iron pallets—54 tons as compared with solid steel pallets.

- ★ Ribbed, pressed steel for greater accuracy, extra strength.
- ★ Produce mortar groove.

Made in sizes and styles to fit any block machine. Write for details. Complete engineering service available at no cost.

The **COMMERCIAL SHEARING & STAMPING COMPANY**
YOUNGSTOWN, OHIO.

THE LEADING MANUFACTURER OF LIFT TRUCK RACKS AND BLOCK CARS for the Concrete Products Industry



- Style 2167 Lift Truck Rack with steel decks in the block plant of the Currier Lumber Co., Detroit, Michigan

**ANY STYLE OR DESIGN LIFT TRUCK RACK
OR CAR FOR YOUR PLANT**

THE CHASE FOUNDRY & MANUFACTURING CO.

COLUMBUS 7, OHIO

LOW PRICED

Power or Hand Operated
CEMENT BRICK AND BLOCK MACHINES

MIXERS

Immediate Delivery
Write for circular with prices

DUNCAN MACHINE WORKS

1113 Story Street

Boons, Iowa

VIBRATOR BLOCK & BRICK MACHINES

BLOCK MACHINE (Single) \$700

BLOCK MACHINE (Double) \$900

BRICK MACHINE (12 at a time) \$700

PARTITION MACHINE (4x8x16) \$700

$\frac{1}{2}$ cu. yd. MIXERS \$500

FREE WEEK'S FREE TRAINING
IN OUR PLANT WITH NO OBLIGATION

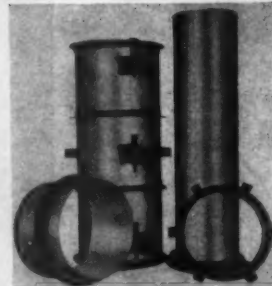
PIPKIN-WILSON MANUFACTURING CO.

1465 S. Washington Ave.

Monroe Park,

Mobile 21, Ala.

ATLAS Concrete Pipe Forms



YOU SAVE Time and Money with ATLAS CONCRETE PIPE FORMS because you can count on them to stand up under hard usage, hold their shape and turn out high grade pipe over a long period of time... pipe which is smooth, round and true with joints that fit accurately together.

Operation is speedy both in setting up, filling and removal of pipe. Write for complete facts. Ask for illustrated bulletin.

**ATLAS STEEL
CONSTRUCTION CO.**

IRVINGTON 17

NEW YORK

Typical Atlas Concrete Pipe Form. No clamps, hooks or gadgets to get out of order.

There's an ATLAS STEEL FORM for Every Purpose



BLOCK PALLETS

Magnesium alloy is stronger and 80% lighter than grey iron. It is being used for many types of castings with amazing results.

Fast production of our pallets insures early delivery. Light weight pallets reduce shipping costs. Let us solve your problems.

MAGNESIUM ALLOYS

904 No. 27th St.

Boise, Idaho

PALLETS for any make of equipment

Made to order in all sizes, from your patterns or ours.

Write for quotation and send sample, drawing, or pattern.

PIPE PALLETS



*Follow the Leader
FOR BEST RESULTS*



WELLMAN BUCKETS

Williams Type

- The bucket leader is Wellman—pioneer in building buckets of welded rolled steel! Gives you longer, better service at lower cost on all types: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service— $\frac{3}{8}$ to $16\frac{1}{2}$ yd. capacity.

SEND FOR BULLETIN

THE WELLMAN ENGINEERING COMPANY

7023 CENTRAL AVENUE

CLEVELAND 4, OHIO



Special
"Steep Side" Body



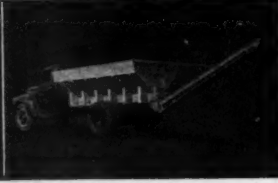
Steel Conveyor "with Belt"
Unloading Rack



Model J Side Conveyor
or Transfer Attachment



Motor Driven
Semi-Trailer Body



Model T Rear Conveyor
or Transfer Attachment

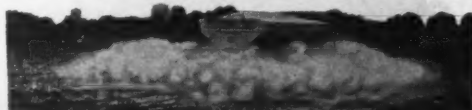
The New Baughman "Self-Unloading" Body is VERSATILE and RUGGED!

Baughman's New Model ASK-2 "Self-Unloading" Body is versatile—spreads lime, dumps rocks, delivers coal into bins, grain into cribs, or transfers its load to another vehicle.

Rugged—one standard body design capable of doing many specialized trucking jobs.

Constructed of high tensile, alloy steel (30% lighter, 17% stronger, and more abrasive resistant than ordinary steel). Ball and roller bearings throughout. Made in either Standard or Steep Sides—Lengths to suit your truck—Power take-off or motor driven—With or without attachments.

*Ask for recommendations—we
have a reliable dealer near you.*



BAUGHMAN MANUFACTURING CO., Inc.

Factories • JERSEYVILLE, ILLINOIS

Manufacturers of the famous "Hi-Speed" line of self-unloading equipment



Baughman's All Steel, Standard 11 foot Model ASK-2 "Self-Unloading" Body with Spreader Attached.

Patented
and Patents
Pending.



Cut-away view of our steel drag-chain with belt attached. Also note new type, adjustable, feed-choker.

View of our heavy cut steel and bronze, 15 to 1, Gear Reduction. Simple, efficient, trouble-free. Will give years of service.



View of our Distributor Case. Heavy, hardened and annealed cut steel gears.



Model O Phosphate and Powdered Lime Spreader Attachment.

Buyer's Opportunity

From U. S. Govt. Surplus

**IMMEDIATE DELIVERY FROM AVAILABLE
STOCKS . . . AT A SAVINGS!**

**NEW ROCK-BITS
INGERSOLL-RAND JACK-BITS**

All Sizes! All Types!

DRILL STEELS
For Ingersoll-Rand and Timken Bits
All Sizes, Types and Lengths

NEW BUCYRUS-ERIE PARTS

Parts For: 15B, 20B, 22B,
33B, 37B, 54B and 120B.

New, All-Steel, Stiff-Leg
DERRICKS

7 Available! 30 Ton at 38 Ft. Radius;
60 Ft. Boom with Bull Wheel.

WRITE . . . PHONE . . . WIRE . . . OR VISIT

Furnival Machinery Company
Lancaster and 54th, Philadelphia 31, Pa.
TRinity 7-5200

BONDED VIBRATING SCREENS



An economical screen for all screening purposes, including coal, sand, gravel, stone and heavy materials; for removing solids from liquids and canning wastes; for grading sizing and washing.

BONDED SCALE CO. 1101 BELLVIEW AVE.
COLUMBUS 7, OHIO

TIRES

Equivalent
Truck
Size

1400 x 20
Tire

1700 x 20
Airplane
Size Tire

\$35⁰⁰
each

12-ply—load capacity 20,000 lbs. rayon construction. These used tires have high original tread—clean inside and need no repairs of any kind.

ALL RUBBER TUBES

for above tires

\$7⁵⁰
each

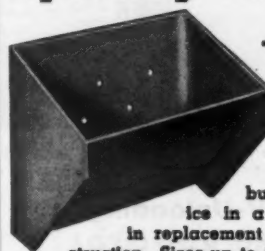
Also Tires for 22" and 24" Wheels

P & S AIRPLANE & IMPLEMENT TIRE CO.
1600 HOLBROOK

TRINITY 13800

DETROIT 11, MICHIGAN

Specify STANDARD
when you need



**ELEVATOR
BUCKETS**

Standard designs or special buckets to your order. Skilled service in a well-equipped plant specializing in replacement buckets. Welded or riveted construction. Sizes up to 42" long, 1/4" steel. Large or small orders given prompt and individual attention. Write for our low prices.

STANDARD METAL MFG. COMPANY MALINTA, OHIO

From the **SMALLEST** to the **LARGEST TONNAGES**

TYLER-NIAGARA SCREENS

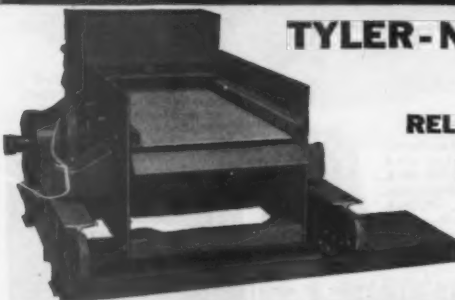
are

RELIABLE

HIGH CAPACITY

EFFICIENT

ECONOMICAL



2' x 4' Type 100
Tyler-Niagara
Screen



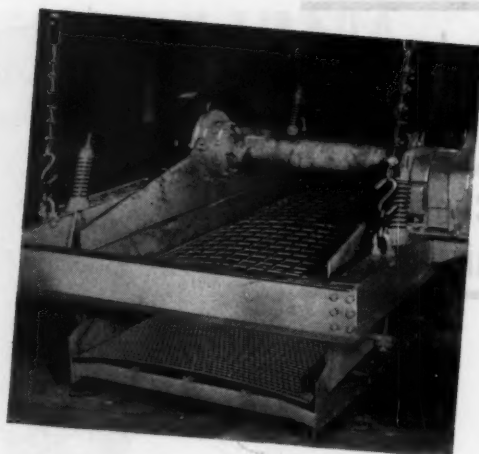
6' x 14' Type 600
Tyler-Niagara Screen

THE W. S. TYLER COMPANY, Cleveland 14, Ohio

for really Tough Jobs!

However tough the screening job, Hendrick heat-treated perforated plate will give exceptionally long-lived service and maintain uniformity of mesh.

Hendrick perforated plate is furnished in any required gauge and size of openings, in a variety of materials, including heat-treated steel for abrasion resistance and special alloy steel for corrosion resistance. Write for detailed information.



Other Hendrick products include Elevator Buckets of all types; Mitco Open Steel Flooring, Mitco Shur-Site Treads and Armorgrids; light and heavy steel plate construction.



HENDRICK

Manufacturing Company

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids.

28 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices in Principal Cities



Continental BEARINGS

Babbitted & Anti-Friction
Pillow Blocks

from

STOCK

Also Shafting, Collars,
Couplings, Clutches,
Takeups and other
lineshaft accessories.



Send your
inquiries to our
nearest District
Office.

50-A

INDUSTRIAL DIVISION

CONTINENTAL GIN COMPANY

BIRMINGHAM, ALABAMA



ATLANTA • DALLAS • MEMPHIS



a Leader
GAYCO
Centrifugal
Air Separator



The features embodied in the new model GAYCO Centrifugal Air Separator make them a leading means of increasing the capacity and efficiency of all types of grinding mills. They have quick, positive adjustment. When once adjusted they are not affected by variation in speed or rate of feed.

They require very little power to operate. And they feature the exclusive GAYCO principle of rejecting coarse particles by means of a centrifugal sizing fan. They separate 99% through 325 mesh, and give 35% to 30% greater recovery of fines.

• Manufacturers also of "Reliance" Crushers, Screens, Elevators, Conveyors, Bin Gates, Grizzlies. Complete crushing, screening, and washing plants for crushed stone, sand and gravel.

Universal Road Machinery Co.

RUBERT M. GAY DIVISION 117 Liberty St. New York 6, N. Y.

Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal

FACTORY & LABORATORY, KINGSTON, N.Y.

HAMMOND
MULTI-WALL
BAGS

HAMMOND BAG & PAPER COMPANY
Paper Mill and Factory: WELLSBURG, W. VA.

Slurries...handled at Lower Cost

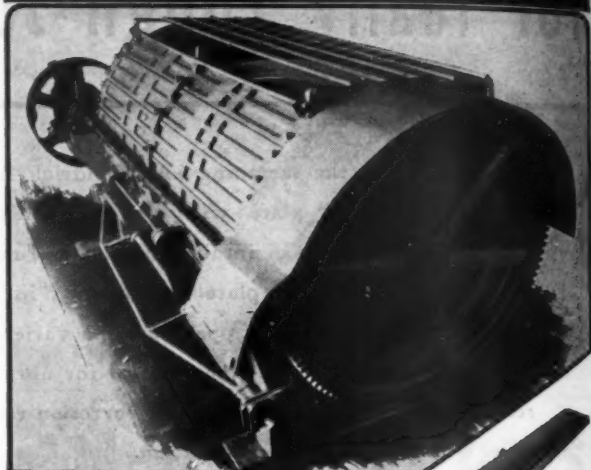
Continuous operation without attention. Individual engineering on every application. Heavy pumping parts of rubber, alloy iron, alloy steel - engineered to your specific requirements... Buy WILFLEY for economy and efficiency.



WILFLEY
centrifugal PUMPS

A. R. WILFLEY & SONS, Inc.
Denver, Colo., U.S.A., New York Office.
1775 Broadway, New York City

NO BOWL TO WEAR OUT
on the DODSON-McCORD MIXER



PATENTED INTERCHANGEABLE STAVES are concave shaped and bolt to the drum ends to form the mixing drum. When any part of the drum becomes worn, it is easy to interchange one stave with another and proceed with the mixing. No outside drum or interliners required.

FAST, THOROUGH MIXING - Specially designed spiral blades mix quickly and thoroughly with low power demand. LOW MAINTENANCE COSTS - Each part and assembly are built for hardest use. Dust-proof, permanently sealed, self-aligning ball bearings throughout. Available in 8, 18, 28 and 42 cu. ft. capacities. Write for illustrative folder and prices.

DODSON
MANUFACTURING CO., INC.
MACHINERY DIVISION
1463 BARWISE - WICHITA 2, KANSAS

PERFORATED METAL
SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications
Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

CHICAGO PERFORATING CO.
2437 West 24th Place
CHICAGO, ILLINOIS
Canal 1459

DRIES and GRINDS
in ONE operation....

B & W Closed-Circuit System

The BABCOCK & WILCOX Co.
85 LIBERTY STREET, NEW YORK 6, N. Y.

C-69

For Tough Screening Jobs—

LINK-BELT VIBRATING SCREENS

Made in various standard sizes—single or multiple decks, with or without enclosures.



● Accurate sizing of damp, dry or sticky materials is successfully accomplished with L-B Screens. Their design includes many outstanding engineering features as a result of over 20 years' experience in solving all types of screening jobs. It is your assurance of maximum production and long life of screens. Investigate Link-Belt on your next screening problem.

LINK-BELT COMPANY, Philadelphia 40, Chicago 9, Atlanta, Indianapolis 6, Pittsburgh 19, Cleveland 13, San Francisco 24, Seattle 4, Toronto 8. Other Offices in Principal Cities.

9071

BLAW-KNOX BUCKETS



Write Bucket Headquarters

Whatever the job, Blaw-Knox provides a bucket that gets more work done with less crane time . . . Over 100 types and sizes! Write for Catalog 1757.

BLAW-KNOX DIVISION of Blaw-Knox Company

2035 Farmers Bank Bldg., Pittsburgh, Pa.

PENNSYLVANIA



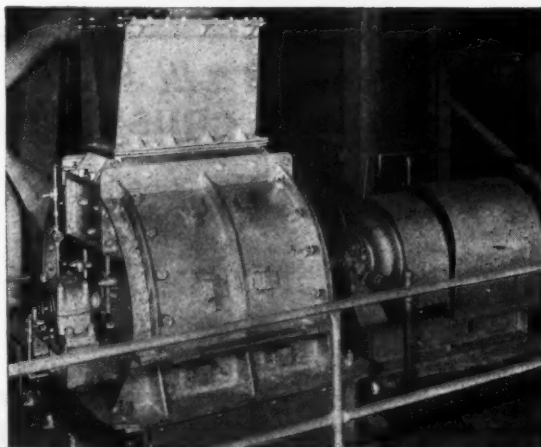
ARMORWELD

SINGLE ROLL CRUSHERS are specialized for small Primary reductions and heavy duty Secondary reductions of Cement-making materials, Limestone, Gypsum, Industrial Minerals, Ores, etc.

Six (6) sizes afford a capacity range from 100 to 300 tons hourly, depending on character of feed and specified sizing.

Massive welded steel unit frame construction—heavy cut steel gearing—patented Toggle Release Mechanism, for positive tramp iron protection, and adjustment for sizing and wear compensation, assure uninterrupted low cost production.

"PENNSYLVANIA"



REVER-SIBLE IMPACTOR

This advanced type makes secondary and finer reductions by repeated smashing impact against imperforate anvils, without cage attrition, to product sizes from 1 1/2" to 1/8" down.

In addition to the materials listed above, **REVERSIBLE IMPACTORS** make low cost reductions on high abrasives to "premium" granular products, with minimum fines.

Alternate right and left-hand operation makes wear symmetrical, and sharply cuts maintenance cost.

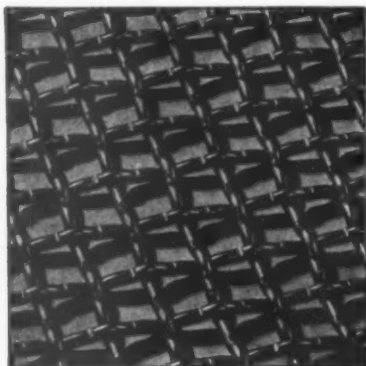
Our Engineers Will Gladly Cooperate with Constructive Equipment and Layout Suggestions.

General Office: Liberty Trust Bldg., Philadelphia

PENNSYLVANIA CRUSHER COMPANY

Associated with Fraser & Chalmers Engrs. Wks., London

STEELBUILT CRUSHERS



STEADY TONNAGE!

HIGH TONNAGE DELIVERY OF ACCURATELY SIZED PRODUCTS DAY IN AND DAY OUT. PROFITABLE BUSINESS! THAT IS THE REPORT FROM CLEVELAND SCREEN USERS. THEY ARE BUILT FROM STALWART STEELS.

STOP LOSSES! WRITE TODAY!

THE CLEVELAND WIRE CLOTH & MFG. CO.

3574 EAST 78TH STREET

CLEVELAND 5, OHIO

Condor RUBBER PRODUCTS

for the Stone, Gravel and Cement Industries

Air, Steam, Water Hose
Suction Hose
Sand Suction Hose
Dredge Sleeves
Cement Loading Hose
Transmission Belting

V-Belts
Conveyor Belts
Elevator Belts
Pulley Lagging
Chute Lining
Launder Lining

Slings
Packing
Molded Products
Abrasive Cutting and
Surfacing Wheels

It Pays You to Put Manhattan on the Job

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION
EXECUTIVE OFFICES AND FACTORIES PASSAIC, NEW JERSEY

HAYWARD BUCKETS

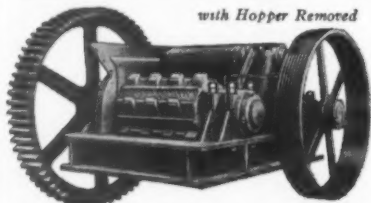
WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

McLANAHAN *All Steel* ROCKMASTER CRUSHERS

with Hopper Removed



Designed for primary crushing of rock, for further processing. Write for data.

Pit, Mine and Quarry Equipment Headquarters since 1835

McLANAHAN and STONE CORPORATION
HOLLIDAYSBURG, PENNA.

JOIN OUR FAMILY OF

12,000 ROCK PRODUCTS

Each ROCK PRODUCTS will help you solve your production and marketing problems. Each issue has as regular features "Operating Trends," "Hints and Helps," "Rocky's Notes," "News of the Industry" in addition to many important articles about successful Rock Products plants.

READERS

12 beautiful issues, \$2 . . . or 2 years, \$3

ROCK PRODUCTS

Mail handy subscription card in this issue. . . . No postage needed. . . . Act now.

309 W. Jackson Blvd.
Chicago 6, Ill.

On most jobs When Excavating is Necessary

The OWEN BUCKET Co.

6040 Breckwater Avenue Cleveland, Ohio

Branches: New York Philadelphia Chicago Berkeley, Cal.

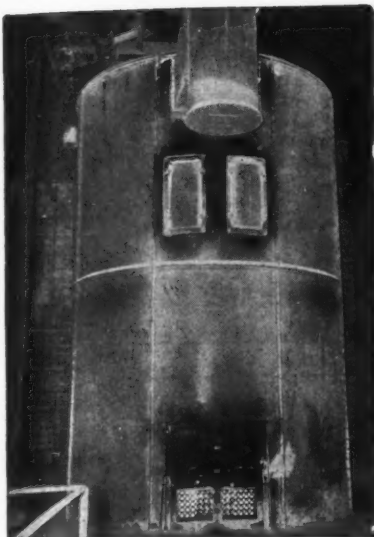


You'll most likely come face to face with one or more Owen buckets, should your travels take you to an excavating job.

The reason why is most simple, for consistent superior bucket performance by Owens is responsible for their widespread use and acceptance.

Bring your equipment catalog files up to date NOW by requesting your copy of the latest Owen Catalog.





PUT THE EHR SAM 17 TON CALCINING KETTLE IN YOUR PLANT

10' high . . . 10' diameter . . . high thermal efficiency . . . sturdy agitator . . . easy maintenance.

Ehrsam equipment also is standard for making wallboard and for every other phase of gypsum product production. Write for our complete engineering service.

The J. B. Ehrsam & Sons Mfg. Co.
Enterprise, Kansas

Also makers of Plaster Mixers, Hair Pickers, Buhr Mills, Crushers and allied equipment.

What Hardness Do You Want Here?
Rockwell 20? - - 35? - - 45? - - 55?

At last — a simpler, surer way of buying hard-surfacing electrodes. A new way that ends confusion and guesswork.



P&H Harcote, a famous name in hard-surfacing electrodes—has now been redesigned in a series of four new electrodes for Rockwell C hardnesses of 20, 35, 45 and 55. If crusher jaws require a hardness of 45 — you order and use Harcote 45. It's that easy!

Get the facts today. See your P&H representative or write for information. P&H also makes electrodes for every other welding requirement.

"Harcote 20"
Rockwell C Hardness
15 25

"Harcote 35"
Rockwell C Hardness
30 40

"Harcote 45"
Rockwell C Hardness
40 50

"Harcote 55"
Rockwell C Hardness
50 60

P&H

General Offices:
4465 W. National
Ave., Milwaukee
14, Wis.

HARNISCHFEGER
CORPORATION



The difference in Hammermills may be greater than you think in terms of time and labor saved . . . of greater production at less cost. That's why we urge you to acquaint yourself with the exclusive features of the DIXIE, which has revolutionized the reduction of raw materials in hundreds of plants the world over.

RECORD CAPACITY . . . MAXIMUM PRODUCTION ECONOMY OF OPERATION

are yours when you install a Non-Clog DIXIE with the Movable Breaker Plate. The DIXIE offers positive feed even on wet, clayey, sticky materials. Quality and size of product may be easily and quickly adjusted. DIXIES increase production . . . decrease need for labor.

**DIXIE MACHINERY
MANUFACTURING CO.**

4202 Goodfellow Blvd.
St. Louis 20, Missouri

**DIXIE MACHINERY
MANUFACTURING CO.**

104 Pearl St. • New York, N. Y.

DIXIE

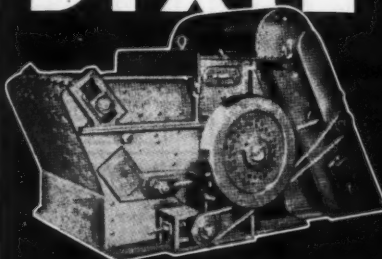
for

CRUSHING

GRINDING

PULVERIZING

SHREDDING



HAMMERMILLS

CLASSIFIED ADVERTISEMENTS

Single insertion rate \$8 a column inch. Larger insertions at lower rates; request classified rate card. POSITIONS WANTED and POSITIONS VACANT (not displayed ads) \$1 a column inch an insertion. Terms: Cash with order except for contract advertisers who are billed monthly.

Business Opportunity	153
Consulting Chemists	153
Consulting Engineers	153
Equipment Wanted	152
For Sale	144-153
Mineral Colors	153
Plants for Sale	153
Plants Wanted	153
Positions Vacant	153
Positions Wanted	153

FOR SALE

CONVEYOR BELTING IN STOCK FOR IMMEDIATE SHIPMENT

1800' 18" 5-ply Quaker
440' 18" 5-ply Hercules
2320' 18" 4-ply Hercules
1820' 24" 5-ply Hercules
2360' 24" 4-ply Hercules
530' 30" 4-ply Hercules
376' 30" 5-ply Hercules

All the above belting has $\frac{3}{8}$ top and $\frac{1}{32}$ bottom cover.

FRANK A. KREMSEY & SONS, INC.

3435 N. FIFTH STREET
PHILADELPHIA 40, PA.

Office Phone Night Phone
Regent 9-7272 Hancock 4-7959

NEW STEEL TANKS STOCK SHIPMENT

80— 4,200 Gal. Cap. 9'2"x8' Vertical
30— 10,000 Gal. Cap. 15'4"x8' Vertical
60— 21,000 Gal. Cap. 21'6"x8' Vertical
15— 21,000 Gal. Cap. 15'x16' Vertical
100— 42,000 Gal. Cap. 21'6"x16' Vertical
30— 42,000 Gal. Cap. 29'8"x8' Vertical
10— 126,000 Gal. Cap. 29'8"x24' Vertical
6— 221,000 Gal. Cap. 38'7"x24' Vertical
10— 420,000 Gal. Cap. 54'x24' Vertical

L. M. STANHOPE
ROSEMONT, PENNA.

FOR SALE

Link-Belt Crawler Crane. Model K-986-powered with completely overhauled Model T.U. Climax 4 Cy Motor. Equipped with 60 ft. boom and $\frac{3}{4}$ yard clam shell bucket. Priced at low ceiling "AS IS"—\$6262.00. Can be seen in operation, six days per week and can make immediate delivery.

FISCHER LIME & CEMENT CO.
Memphis, Tenn.

DIESEL POWER



Diesel Generators
Alternating Current
Direct Current
15 kw to 1000 kw

PORTABLE POWER UNITS

International Harvester Caterpillar Cummins
Buda Superior Waukesha Sheppard Lister
Murphy Hercules

IN STOCK—READY FOR SERVICE

Shops and Warehouse: Jersey City, N. J.

Specify Your Diesel Power Requirements

A. G. Schoonmaker Company

Incorporated
Power Equipment
50 Church St. Phone Worth 2-0455
NEW YORK 7, N. Y.
Business Established 1898

FOR SALE

1—Belt and Bucket Elevator, Continuous type, 20' c/c buckets 12x8—New—Never Installed.
1—Sol No. 175 Smith Type CLUTCH and ring 4-7/16" bore—Used.
1—Bessmer Gas Engine, 165 hp—Used.
1—230' COMPRESSOR Gardner Denver 6 cylinder water cooled with CATERPILLAR D-8800 Power Unit Semi Portable completely rebuilt this year.
2—DEMPSTER DUMPSTER Hoisting Units Model 200 L F each with 4 2 yd. buckets.
11'2" MORSE ROLLER CHAIN No. E-160 triple strand 2" pitch extra links with 2 triple width steel sprockets 24" and 18" P.D.

BLACK WHITE LIMESTONE CO.
Box 87, Quincy, Ill.

DEMPSTER DUMPSTERS

Model 150-B—\$400.00

BROOKS LOAD LUGGERS

Model 150-A—\$400.00

Model CH-150—\$435.00

Model CH-200—\$475.00

TILT-TYPE BUCKETS—\$50.00

Immediate delivery

These hoists and buckets were used less than 1 year.

GENERAL TRADERS

2675 Grand Ave. Chicago 12, Ill.

Transit Mixers For Sale

3—1942, 2 cu. yd. Jaeger High Dump Transit Mixers mounted on 1942 WA120 Cab Over Whites
2—1½ cu. yd. Jaeger Transit Mixers mounted on 1941 Conventional Fords
3—1941, 2 cu. yd. T. L. Smith High Dump Transit Mixers mounted on 1941 3 ton Conventional Macks.
1—1942, 2 cu. yd. T. L. Smith High Dump Transit Mixers mounted on 1942 Cab Over Chevrolet
1—21 Parson Ditching Machine
1—100-150 new Buda Diesel Engine with 6" centrifugal pump.

All above equipment in A-1 condition.

J. Shaw Coal & Material Company
1207 East 19th St. Kansas City 8, Mo.

38 TON VULCAN LOCOMOTIVE

36" ga. Industrial, steam coal-fired saddle tank.

IRON & STEEL PRODUCTS, INC.

13492 S. Brainard Ave., Chicago 33, Ill.
"ANYTHING containing IRON or STEEL"

FOR SALE

Stationary $\frac{1}{2}$ yd. concrete mixers paddle type, two sack capacity reduction geared, low side discharge. Requires 10 horse motor. Price without motor, \$550 FOB Boise.

BROWN EQUIPMENT CO.

Tele: 6716 or 3337 Boise, Idaho

FOR SALE

Hyster Lift Truck Model H.A.J.E. 4000 lbs. capacity, 10 ft. lift, \$2,600

E. A. WEBB

1320 E. Lester St. Tucson, Ariz.

FOR SALE

One No. 2 Stephan Flam concrete block machine, complete with three molds, motors, mixer and pallets ready to run—immediate delivery.

ROGERS CONCRETE BLOCK CO.

North Little Rock, Ark.
C. A. Rogers, Mgr.

DEPENDABLE USED MACHINES

Special.—Universal truck crane, rebuilt, on ten 10-30x20 recapped tires
Link Belt 1 yd. crane
P&H Model 700 crane
Cedar Rapids 9x16 crusher
Gruendler 10x16 crusher
Rogers 10x20 crusher
Telsmith 9x30 crusher
24x14 port. roll crusher
Robins 42" belt feeder
Diamond 9x18 gravel plant
Day No. 5 Hammermill
Haise Model 50 loader
Fridy car puller
Carter 4" pump
5x14 Nordberg screen
Austin Badger shovel

All equipment reconditioned in our own plant.

TRACTOR & EQUIPMENT CO.

3520 W. 51st Street

Chicago 32, Ill.

FOR SALE

**CINDER CRUSHERS
VIBRATING SCREENS
SCALES & CONVEYORS
IMMEDIATE SHIPMENT**

Cinder Crusher
10 to 20 ton capacity per hour....\$345
Large Cinder Crusher
25 to 60 ton capacity per hour.... 795
3' x 6'—1 deck Vibrat. Screen..... 495
3' x 8'—1 deck Vibrat. Screen..... 585
3' x 8'—2 deck Vibrat. Screen..... 685
3' x 8'—3 deck Vibrat. Screen..... 885
Bag and Block Conveyors 495
Portable Bag and Block Piler 530
15 Ton Truck Scales 450
20 Ton Truck Scales 510
Belt Conveyors 395

BONDED SCALE COMPANY

128 Bellview, Columbus 7, Ohio

Phone GA 5712 UN 2832 Evenings
Visit our factory. We manufacture more
than 150 models of Scales, Screens,
Crushers, and Conveyors. Inspect several
models in operation.

3—Appley machines, 1946 models,
perfect condition, with all at-
tachments.
6000—8x8x16" Pallets.
3000—4x8x16" Pallets.
1—12 cubic foot Mixer.
1—23'12" Belt Conveyor.
1—Three-way Hopper.
Equipment in operation; priced
right for quick sale; immediate
delivery.

CEMENT BLOCK INDUSTRIES

6th Ave. and 31st St., Tampa, Florida
Phone Y-1529

FOR SALE

One new Rogers two drum hoist-band
friction with 25 HP—220/440 volt motor
V belt and gear driven.

SILICA PRODUCTS CO., INC.

Guion, Arkansas

FOR SALE

1—Lima Shovel with Wisconsin Mo-
tor—type E, size 6x7 with 1
Ameco 1 1/4 yd. Shovel. Rebuilt
and Guaranteed.

WEBBER EQUIPMENT CORPORATION

17 East 45th St. N.Y. 17, N. Y.

For Sale

Transit Concrete Mixers 1.9 yard
capacity complete with trucks. Reas-
onable.

W. G. BLOCK CO.

Davenport, Iowa

FOR SALE

Belt Conveyors, 50 to 60 feet long.
Two cement bag cleaners.
Approx. 75 block racks on rails, ball bearing
wheels. Rail Transfer.
Approximately 75 small racks, capacity 30 block
per rack.
One No. 3424 Dixie Premier Jr. Non-Clog Ham-
mermill-Hammer crusher.
CONCRETE & CINDER BLOCKS PRODUCTS CO.
10 Buell Road Rochester 11, N.Y.
Phone, Genesee 2121

**FOR
IMMEDIATE
DELIVERY
OF
RUBBER PRODUCTS**

Conveyor Belting...Transmission
Belting...Elevator Belting...Fire,
Water, Air, Steam, Suction or
Welding Hose, etc.

CALL, WIRE or WRITE
CARLYLE
THE
RUBBER HEADQUARTERS

**CARLYLE RUBBER PRODUCTS ARE
NEW, GUARANTEED & LOW PRICED**

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	20"	5	1/8"	1/32"
42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
24"	4	1/8"	1/32"				

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE					
Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes "D" WIDTH All Sizes
"B" WIDTH All Sizes "E" WIDTH All Sizes
"C" WIDTH All Sizes Sold in Matched Sets
Inquire For Prices - Mention Size and Lengths

**PROTECT THAT PLANT
FIRE HOSE**

**APPROVED SPECIFICATION HOSE
EACH LENGTH WITH COUPLINGS ATTACHED**

Size	Length	Per Length
2 1/2"	50 feet	\$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1 1/2"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

CARLYLE RUBBER CO., INC.

62-66 PARK PLACE

NEW YORK, N. Y.

Consult Albert!

Tubular Piling, Points, Sleeves and
Cobi Pile Tips
Power Piping Fabrication
Supplies of Fittings, Valves and
Tube Turns

Pipe—Small and Large Diameters, Iron and
Steel, Welded, Seamless, Corrugated

Albert Pipe Supply Co., Inc.
Berry & N. 13th St., Brooklyn, N.Y.
Phone: Evergreen 7-8100

CONVEYORS

1—36" Belt Conveyor, 147' long with 100
ft. bridge. Capacity 720 tons per hr. 50
HP G. E. 220/440 motor.
1—42" Belt Conveyor, 52' long. Capacity
800 tons per hr. Louis Allis 30 HP
220/440 motor. F.O.B. cars, Tennessee
4 CU. YD. MIXERS
3—Smith, hydraulic control tilting. 75
HP GE 440 volt. F.O.B. cars, Tennessee
1—Davis, hydraulic control tilting. 100
HP GE 440 volt. F.O.B. San Francisco

ROCK WAGONS

2—LaPlant-Choate, model DW 14. 10
cu. yd., hydraulic side dump. On 20"
Athy tracks. F.O.B. cars, Nebraska

COAST EQUIPMENT CO.

948 Bryant St. San Francisco, Calif.

FOR SALE

For IMMEDIATE DELIVERY

Used Farrel-Bacon Crushers—

No. 15B 36"x24", No. 12B 36"x18"
No. 23B 36"x15", No. 23½B 36"x14"
No. 22B 36"x10", No. 10B 30"x13"
No. 9B 24"x15", No. 8B 20"x10"

Used Traylor Crusher 2'4".

Used No. 6 Champion Crusher.

Used No. 37 Kennedy Crusher with
built-in motor.

2 Used 12"x24" Climax Crushers.

Used Vibrating Screens—two and
three deck Symons and Kennedy
single deck 4'x6' Seco.

Revolving Screens—36" and 48".

12" Chain belt Bucket Elevator—
75' centers.

15-ton Truck Scale.

20 New Robins 14" Troughing Idlers.

6 New Robins 14" Return Idlers.

BACON-PIETSCH CO., INC.
Singer Bldg., 149 Bldy., N.Y. 6, N.Y.
Phone Barclay 7-3352

17—Model L1600 Cummins Heavy Duty medium
speed diesel engines, 225 HP at 800 RPM, 6
cylinder, 7x10 bore and stroke, 2300 cu. in.
complete with radiator and fan. Thoroughly
reconditioned.

5—Model HP-600 Cummins Full Diesel, Cold
Starting Power Units, 150 HP at 1800 RPM.
Complete with radiators, Twin Disc clutches,
equipped with gasoline, starting engines, mount-
ed on steel sub-bases, with fuel tank built in.

36—New Chrysler-Hale high pressure pumping
units, Hale centrifugal pumps, 500 GPM at
150 lbs. pressure, 346 ft. head, 4 in. suction,
2-2½ in. discharge outlets, direct connected to
model T118, 59 HP, 6 cylinder, 3-7/16x4½
B & S Chrysler engines.

1—Sterling Viking 8 cylinder, 400 HP at 900 RPM
gas engine, serial No. TC8-090, direct connected
to Electric Machinery Co. AC generator, serial
No. 79680, 200 KW, 900 RPM, 3 phase, 60 cycle,
440 volt, with 7½ HP DC belted exciter and one
Panel General Electric switchboard, all mounted
on heavy steel skid.

1—Fairbanks-Morse 360 HP type Y style VA, 6
cylinder, 257 RPM, diesel engine (cold head)
No. 674386, direct connected to Fairbanks-Morse
generator, 240 KW, 300 KVA, 257 RPM, 2300
volt, 3 phase, 60 cycle 80% efficiency PF serial
No. 173914 with DC Exciter, and single panel
switchboard.

For Full Information and Prices
Write or Phone

H. A. McCARTHY

310 Thompson Building

Tulsa, Okla.

Phone 5-3296

Conveyors & Accessories

900' Prewar 8-ply 48" wide Conveyor Belt
48" Smooth Top Plate Conveyor
Belt Pulleys, Idlers, Bearings, Gears, Belt
18"x24" Self-Contained Plate Conveyor
24"x48" Link-Belt Plate Feeder
Merrick Weightometer for 30" belt or less
Belt Trippers for 14, 16", 18" & 20"
Dings Magnetic Pulleys, 30" diam. 30" face
Garvey Magnetic Pulleys 30" diam. 18" face
16"x42" Steel Scraper Conveyor with Frame
Gravity Roller Conveyors, 6" to 20" wide
18"x6" Jeffrey Steel Apron Conveyors

Bucket Elevators

6"x38" Continuous type Bucket Elevator
70' of 8" Reliance Drag Conveyor, 3-T sprockets
10", 12" & 14" open & Closed types, Belt/Chain
Belt Elevators with 10" & 16" C-type Buckets
14"x56" Continuous type Bucket Elevator
12"x50" Spaced type Bucket Elevator
600' of 12"-p. Steel Bushed Chain, 60,000 lbs.

Crushers, Rolls, Mills

2 No. 0 Sturtevant Rotary Fine Crushers
No. 16-40 Gruendler Peerless Grinder
2"x3" No. 1 Laboratory Jaw Crusher
2"x6" Sturtevant Roll Jaw Laboratory Crusher
2"x6" Open Door Laboratory type Jaw Crusher
4"x6" A-C. Roll Jaw Laboratory Crusher
10"x18" Sturtevant 2-roll Crusher
6"x15" Sturtevant Jaw, for fine crushing
A-C Gyrotray 3-D Reduction Crusher, short head
12"x22"-D Acme Jaw Crusher
9"x15" Champion Jaw Crusher
24"x24" Single Roll Crusher, with knobs

Vibrating Screens

3'x5' & 4'x5' 2-deck Hummer Vibr. Screens
3'x5', 4'x5' & 4'x7' 1-deck Hummer Screens
2 Hummer Enclosed 2-deck 4'x5' Vib. Screens
18"x3' Jigger 2-deck Vibrating Screen
3 Bushman Vibrators
40"x16" Haisa Revolving Screen
Revolving types, 66"x10", 6'x18" & 30"x9"

Miscellaneous

2-drum 15-hp. Electric Nova Hoist
1-drum 25-hp. Mead-Morrison Electric Hoist
1-drum 50-hp. McKiernan-Terry Hoists
12 Gear Reducers, Also ½ & 5-hp. Reeves Drives
30-hp. A.C. Motor, 12"x12" Simplex Bin Gates
8"x6", 6"x6", 6"x4" & 4"x3" Centrifugal Pumps
6-36" g. Side Dump Cars & 4-ton Vulcan Loco-
motive

G. A. UNVERZAGT & SONS
136 Celt St. Irvington 11, N.J.

CONVEYOR ENGINES

Wisconsin "VF-4" 15-25 HP New
Power Units, w/ 4-1 Reduction
Clutch. Immediate Delivery at
\$342.56.

EIGHMY EQUIPMENT COMPANY
2613 11th St. Rockford, Ill.

For Sale

ELECTRIC HOIST

Lambert with 44" dia x 44" face drum,
complete with 100 HP motor. Now avail-
able for immediate shipment.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

FOR SALE

1 Acme Road Crusher, NEW,
No. 1831—275 RPM, size 14"
x 26"

WEBBER EQUIPMENT CORPORATION
17 East 45th St. N. Y. 17, N. Y.

FREE SERVICE for BUYERS

Here is the quick way to get information and prices
on machinery and equipment. Just check the item
(or items) listed below about which you desire in-
formation. Then send this page to us, and we will
take care of the rest.

TEAR OFF HERE

...Admixtures, Aggregate
...Aftercoolers, Air
...Aggregates (special)
...Air Compressors
...Air Separators
...Asphalt Mixing Plants
...Bagging Machines
...Bags
...Barges
...Batchers
...Belting, Conveyor,
Elevator, Power
Transmission
...Belting, V-Type
...Belt Repair Equipment
...Bin Level Indicators
...Bins and Batching
Equipment
...Blasting Supplies
...Block Machines,
Concrete Building
...Boddes, Trailer
...Brick Machines and
Molds
...Buckets
...Buildings
...Cars, Industrial

...Classifiers
...Clutches
...Coal Pulverizing
Equipment
...Concentrating Tables
...Concrete Mixers
...Concrete Mixing
Plants
...Concrete Specialty
Molds
...Concrete Waterproof-
ing and Dampproof-
ing
...Conveyors
...Coolers
...Cranes
...Crushers
...Derricks
...Dewatering Equip-
ment, Sand
...Diesel Engines
...Dragline Cableway
Excavators
...Draglines
...Dredge Pumps
...Drilling Accessories
...Drills

...Dryers
...Dust Collecting
Equipment & Sup-
plies
...Electric Motors
...Engineering Service,
Consulting and De-
signing
...Explosives & Dynamite
...Fans and Blowers
...Flotation Equipment
...Gasoline Engines
...Gear Reducers
...Generator Sets
...Grinding Media
...Gypsum Plant Ma-
chinery
...Hard Surfacing Ma-
terials
...Hoists
...Hoppers
...Kilns: Rotary, Shaft,
Vertical

...Locomotives
...Lubricants
...Mills
...Pulverizers
...Pumps
...Scales
...Screen Cloth
...Screens
...Scrubbers: Crushed
Stone, Gravel
...Shovels, Power

...Speed Reducers
...Tanks, Storage
...Tractors
...Trucks, Industrial
...Trucks, Mixer Body
...Trucks, Motor
...Vibrators
...Welding & Cutting
Equipment
...Winches
...Wire Rope

If equipment you are in market for is not listed above,
write it in the space below.

Send to:

**Research Service Department
ROCK PRODUCTS**

309 W. Jackson Blvd.

Chicago 6, Illinois

Your Name..... Title.....

Firm Name.....

Street

City..... State.....

NEW TRUCKS

MACKS - WHITES

Heavy Duty Tandem—Axle 6x4 and 6x6—Diesel and Gas—Duplex Transmissions—1100x24 Tires—202 inch Wheelbase—Air Brakes—Suitable for Crane Mounting, Mixer Mounting or Heavy Duty Tractors. Can furnish and install any type of dump bodies. Immediate Delivery.

Call, Write or Wire SAM COHEN

COHEN EQUIPMENT COMPANY

6432 Cass Avenue

Phone: Madison 5300

Detroit 2, Michigan

NEW DUMP TRUCKS

Diamond T's Dump Trucks

3 Axle Diamond T with 7 Yard Bodies, Air Brakes.

Only \$7000.

International Cab over Engine, two Axle, Conventional, with 6 Yard Bodies.

Only \$7500 each.

CRUSHERS

GYRATORY: 42" Gates K. 38" Superior McCully (like new). 20" Superior McCully Gates Nos. 12, 10, 9, 8, 7 1/2, 6, 5, 4, 3, 2, 1 (75 avail.). Telamith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins Kennedys and Traylor's, many sizes. JAW TYPE: Traylor 60x34, 48x30, 42x48, 24x72. Superior 54x60 & 24x36. Buchanan 30x42 Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 15x36. REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telamith 3-F & 40. Traylor 36" T2 8", 10", 12". Super. McCully 6"x10". Newhouse 5, 7, & 10". Symons Cone & Disc Ty. 2' to 4'. ROLLS: Allis-C. 12 1/2x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 30x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc. HAMMERMILLS: Williams No. 1, 2, 3, 4, 8, & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40. Etc. MILLS: Kennedy Ball 4x6, 5x6 & 6x2. Marcy 8x5 & 10x9. Hardinge 6"x3", 8"x30" & 6"x9". Misc. Tube Mills 5' & 6'x22". Sturtevant Ring Roll. Raymonds, Kents, Fuller Lehigh, Etc. CRUSHING PLANTS: No. 65 Diamond No. 22 —Pioneer 8x24, 10x30 Good Roads, 9x40 Austin-Western, 9-36 C.R.

MISCELLANEOUS ITEMS

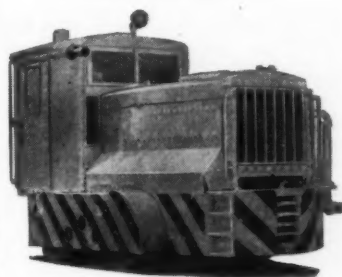
Barges, Bins, Buckets, Rollers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Elevators, Excavators, Generators, Hoists, Kilns, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

ALEXANDER T. McLEOD

7229 Rogers Avenue CHICAGO (45)

FOR SALE

Four Plymouth Locomotives, 8 ton, Model DLB. Good running condition. Buda Engine, Model FRH. Standard Gauge. Offered subject to prior sale. Act quickly for immediate inspection.



THE KENTUCKY STONE COMPANY, INC.

214 FINCASTLE BUILDING
LOUISVILLE, KENTUCKY

5'x22" BALL MILL HARDINGE CONICAL HEAVY DUTY TYPE B

6'x15' BALL MILL
ALLIS-CHALMERS
BALL MILL, CHILLED
IRON BOLTED LINERS,
TRUNNION FEED AND
DISCHARGE, COUNTER-
SHAFT AND BEARINGS,
FOR BELT DRIVE

SCREENS

4'x20' and 4'x8'
REVOLVING SCREENS
4'x10' ROBBINS 2 DECK
ELLIPTICAL VIBRATING
SCREEN

R. C. STANHOPE, INC.

60 East 42nd St., New York 17, N.Y.

JOHNSON & HOELER, Inc.

LANSDOWNE,

DEL. CO., PENNA.

Plant—2nd Street and Penna. R.R.
Fernwood, Penna.

SAND, GRAVEL AND CRUSHING
PLANTS DESIGNED AND EQUIPPED.
NEW AND USED CONTRACTORS
EQUIPMENT FOR SALE AND RENT

FOR SALE

1—300 HP Diesel Electric Generating
Set, 3 ph—60 cy. 440 volt—Generator
250 KVA Complete—Rebuilt and
Guaranteed

WEBBER EQUIPMENT CORPORATION

17 East 45th St. N. Y. 17, N. Y.

FOR RENT OR SALE

Davey "210-D" Slightly used compressor 4-wheel, pneumatics Cleveland "DR-30" Wagon Drill. Slightly used.

EIGHMY EQUIPMENT COMPANY
2613 11th St. Rockford, Ill.

FOR SALE

1—3 ton per hour Kunts Hydrator. Each replaced for larger sizes. These are rebuilt and 100% efficient—90% new.
1—3 ton per hour Clyde Batch Hydrator.
We have a number of lime feeders and a number of hydrate feeders.
1—Portable Ingersoll Rand Air Compressor—315 cu. ft. per minute, Waukesha engine. First class condition—ready for use.
One complete Lime Hydrating Plant, including buildings.
One 212 Gallon Road Grader 12' Blade—Excellent condition.
1—8 ton Clyde Continuous Hydrator.
1—Killer Road Rooter.
1—7 1/2 h.p. Gasoline Driven Power and Lighting Plant.

Lime & Hydrate Plants Co.

50 S. Beaver Street, York, Pennsylvania

LOCOMOTIVE CRANE

25 ton Browning No. 8-C, steam, 50' boom, serial 2440, new boiler in 1943, and many other new additions.

Attractive price

Allstates Equipment Co.

343 So. Dearborn St. Chicago 4, Ill.

TUBE MILLS — LIKE NEW

- 1—7'x24' Allis-Chalmers Two Compartment Tube Mill complete design, complete new with the exception of the shell and heads.

Shell is $\frac{3}{8}$ " plate, trunnion, head and main bearings of cast steel, liner plates are $\frac{1}{4}$ " thick and are made of a special abrasive resistant electric furnace steel. Main drive gear has cast teeth, semi-steel. Main pinion is hard tool steel.

Feeder mechanism is made of cast iron with steel parts. Feed screw running through the trunnion and carrying the material into the mill is made of the same quality electric furnace steel as the liner plates.

These mills will produce 9 tons clinker per hour of average hardness, all under $1\frac{1}{4}$ ", at a fineness of 85% passing a 200 mesh screen. Grinding rocks of an average hardness, production will be about 15 tons per hour. Ball charge required is 35 tons.

- 1—No. 12 Allis-Chalmers Two Compartment Tube Mill, 6'x22', with Link Belt silent chain drive, complete. Reconditioned, ready for operation.

Shell is made of mild rolled steel plate. Heads are cast in one piece, semi-steel. Main gear is made of cast steel.

All of the liner plates, screen plates, etc., are made of a special abrasive resistant steel.

Production is 5 tons per hour with clinker of average hardness, all under $1\frac{1}{4}$ " size at a fineness of 85% passing 200 mesh screen. Capacity in rock will be 8 tons per hour. This mill will require a ball charge of about 25 tons.

70 tons— $\frac{3}{4}$ " to $1\frac{1}{4}$ " used chilled iron grinding balls.

KILNS, PULVERIZERS, MILLS, DRYERS, equipment for cement mill operation—

GASOLINE DRIVEN POWER PLANT

- 1—Gasoline driven power plant, 28 KW or 35 KVA, Hercules Motor Corp. engine, $4\frac{1}{4}$ x $4\frac{1}{4}$, Model WXLC-3, Serial No. 180572, with U. S. Motor Generator, Type M-7, 220 volt, 3 phase, 60 cycle, 1200 RPM, Serial No. 2981, complete self-contained with panelboard.

Has a center tap, 110 volts, single phase.

MOTOR DRIVEN WELDERS

300 & 400 AMPERE

HOBART—GENERAL ELECTRIC—LINCOLN

Latest Type—New 1943—Reconditioned

check your requirements with

Heat and Power Co., inc.

70 PINE STREET

WHITEHALL 3-2172

NEW YORK 5, N. Y.

30 ton, Davenport Locomotive, Gas-elec.

20 ton, Plymouth Locomotive, Gas Shovel attach. for 41B Bucyrus-Erie $\frac{1}{2}$ yd. Byers Bearcat Shovel Shovel attach. Northwest, Model 104 McK-Terry Pile Hammer, No. 3 25 ton Browning Locomotive Crane 35 ton, McMyler Locomotive Crane 1 yd. Page Dragline Bucket Model 4, Keystone Skimmer, Gasoline

J. T. WALSH

Brisbane Bldg. Buffalo 3, New York

NEW ROCK BITS

Timpinkin 4 point side hole 20c ea. lots of 1000.
I. R. Type one 4 point 15c ea. lots of 1000.
New drill steel $\frac{1}{2}$ price.

G. W. KAUFMAN

Markley Road Cincinnati 30, Ohio

"OVER A MILLION"

BRASS, IRON & STEEL VALVES

In Stock for Immediate Nationwide Shipment—Welding Fittings—Flanged Fittings & Expansion Joints.

METROPOLITAN

PLUMBING SUPPLY CO.

313 E. 31st St. New York City MU 3-3408

CRUSHING EQUIPMENT

- 1—Cedarapids "2540" Use Jaw Crusher
1—Stephens-Adamson "1624" Coal or Silica Roll Crusher
2—Eagle Bucket Loaders, New—for Truck Mounting
1—General Bucket Loader
1—Barber-Greene Bucket Loader
1—Pulverizer or Crusher Chassis
1—Lippman Pulverizing Plant w/power, Cheap
1—Pulverizer Plant: Gruender "3XB," Seco 3xs Screen, LeRoll 140 HP engine, conveyors, etc.
1—Complete Lime Dust Plant; Pulverizing Plant, Compressor, Quarry Trucks, Shovel, etc at \$10,000

SHOVELS AND CRANES

- 1—Link-Belt Speeder "TC-5" Cargo Crane, Solids Slightly used
1—Northwest No. 7, $1\frac{1}{2}$ yd. Dragline
1—P&H No. 700 Dragline
1—Northwest "104" $1\frac{1}{2}$ yd. Dragline
1—Sargent $\frac{1}{2}$ yd. Dragline, Rebuilt
1—45' Boom for Northwest "105"
1—45' Boom & Fairlead—for Koehring "303"
1—Wellman 1 yd. New Material Handling Clam Bucket
1—Wellman $\frac{1}{2}$ yd. New General Purpose Clam Bucket
1—Owen $\frac{1}{2}$ yd. New Material Handling Clam Bucket
1—Daniels-Murtaugh $1\frac{1}{2}$ yd. New Drag Bucket
1—Page "RC" $\frac{1}{2}$ yd. New Drag Bucket
5—Hendrix $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 yd. New Drag Buckets
1—LaCrosse 35 Ton Trailer, Semi, New
1—Transport 30-Ton Semi-Trailer

POWER UNITS

- 1—Cummings 118 HP Rebuilt Diesel
1—Buda "6DC-844" 125 HP New Diesel
1—Buda "6LD-908" 125 HP Diesel, Rebuilt
6—Wisconsin "VP-4" 15-25 HP Engines w/4-1 gear reduction
6—Wisconsin "AHH" 6-9 HP Engines w/4-1 gear reduction

MISCELLANEOUS

- 1—FWD 6-Ton Truck Chassis
1—International E-11 Tractor
2—Homestead Steam Jenny, New

EIGHMY EQUIPMENT CO.

Office: 526 W. State St., Rockford, Ill.
Shop: 2613 11th Street

For Sale

QUARRYING MACHINERY

- 1—Portable I. R. Air Compressor
1—I. R. Jack Bit Oil Furnace
1—I. R. Drill Sharpener
10—Quarry Drills

Write For Price List B

VERMONT MARBLE COMPANY

Pretor, Vermont

For Sale

WESTINGHOUSE motor, 75 HP Type C5 200 v. 3 ph. 60 cycle, 875 RPM. 100% continuous load. Balls and 10x14 pulley but no starter.

A. COURCHESNE, INC.

Box 200

El Paso, Texas

IMMEDIATE DELIVERY

Practically new Stearns latest Clipper block machine, skip hoist and mixer with button controls, complete with motors. Also five year old Stearns equipment complete with motors. Can furnish pallets and racks for complete plant.

Write Box E-21, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

FOR SALE

SHOVELS—CRANES

Link-Belt K55 Diesel dragline 85' boom.
Manitowac Speedcrane, 40 tons cap. 100 ft. boom.
Kochring 601 shovel-crane-dragline 1½ yd. Rebuilt.
Marion truckcrane 18 tons on Mack chassis.
P & H 900 drag. Diesel 80' boom 4 yd.
Lima 101 shovel and crane. 1½ yd. cap.
Lorain 75B 1½ yd. shovel and crane.
Bucyrus-Erie 1 yd. shovel New Diesel Engine.
Marion Model 490 elec. shovel 2½ yd.
Marion 37 shovel, steam, 1½ yds.
Marion Model 450 steam shovel, 1½ yds.
Marion Model 450 gas-elec. shovel, 1½ yds.
Kochring 901 shovel-crane ¾ yd.
Lorain 55D 1 yard shovel.
Insley ½ yard, ¾ rev. shovel.
Northwest Model 104, 1½ yd. crane, boom 70'.
P & H 400 shovel-crane ¾ yds. capacity.
P & H 600 crane, 1 yd. capacity.
P & H ½ yd. truckcrane.
Bucyrus-Erie 50B steam shovel, 2 yds.
Monaghan 3½ W. Diesel dragline, 92 ft. boom.
Bucyrus-Erie elec. tunnel shovel, 1 yd.
Osgood 1½ yd. Diesel shovel.
Osgood shovel, 1½ yds. gas.
Byers Bear Cat ½ yd. crane.
Byers Bear Cat ½ yd. backhoe and crane.

READY MIX CONCRETE PLANT

Blaw-Knox 3 compst. 500 ton aggregate bin with
2500 bbl. bulk cement silo, 4½ yd. batcher, ele-
vator and screw conveyor, etc. Complete.

TRACTORS AND MISCELLANEOUS

International TD14 tractor with bulldozer.
International TD35 tractor with bulldozer.
D2 tractor.
Allis-Chalmers HD10 tractor and angledozer.
Allis-Chalmers HD10 tractor and 6 yd. scraper.
Allis-Chalmers LO with eight yard scraper.
Gallon Grader Model EZ, dual pneumatic.
Allis-Chalmers W8 tractor with bulldozer.
Cietrac 40D tractor with angledozer.
Allis-Chalmers K tractor with bulldozer.
Allis-Chalmers Model L tractor with bulldozer.
International TD18 tractor with bulldozer.
International TD40 tractor with bulldozer.
Buffalo-Springfield 10 ton 3 wheel road roller
new 1941.

2 Dempster Dumpsters with 20 buckets.
Drill steel, 1½", blitted and shanked.
Armstrong No. 29 Blast Hole Drill electric.
500 drill bits, 1-R and Timken. Various sizes.
Several dredge pumps available from 6" up.
3 Euclid Model 1-ZWCL dump trucks.
White Model 722 8 yd. dump truck.
White Model 710A 7 yd. dump truck.

TRANSIT MIXERS AND OTHERS

Smith 1½ yd. tilting mixer 30 hp. electric drive.
Smith high discharge 4 yd. on Int. Rebuilt.
Smith high discharge 5 yd. mixer on Autocar
truck. Rebuilt.
Rex 4 yd. transit mixer on Autocar truck. Rebuilt.
2 Jaeger 3-yd. truck mixers, unmounted.
2 Jaeger 5-yd. truck mixers, unmounted.
2 Jaeger 7 yd. truck mixers, unmounted.
Rex 3 yd. transit mixer on Mack truck.
Ransome 14S mixer, steel wheels, power loader.
Kochring 28S Electric, on skids.
Mixer 28S, Smith electric stationary.
Mixer, Kochring 28S, gas, skid mounted.
Mixer, Jaeger 14S, on pneumatic tires.
Multifoote 27E mixer with boom and bucket.

CONCRETE BLOCK PLANTS

Jolterite No. 7 complete with all necessary acces-
sories.
Stearns Clipper stripper, converted to vibrator type.
Complete with all accessories.

CRUSHERS—CRUSHER PLANTS

Roll, 54x24, 54x20, 48x36, 30x24.
Allis-Chalmers 42" gyratory.
Gyratory crusher: K.V.S. 30, 37-S, 49; 32, 8A,
8B; Traylor 8"; McCully, 13", 8", 6".
Allis-Chalmers 6" fine reduction crusher.
Jaw: 6x12, 9x16, 10x20, 14x24, 12x36, 13x30,
16x32, 24x50.
We have available Portable and Stationary Crush-
ing Plants. Write for details.

SCREENS

Al-Chal. Revolv. Extra heavy 48"x10' with ex.
screen.
Telamith 4'x10' triple deck. Vibrating.
Kennedy Van Raun 3'x5'.
Type F.B. single deck 4'x7' Vibrating.

LOCOMOTIVES—CARS

Mack 60 ton std. gas. loco.
Baldwin-Westinghouse 25 ton elec. loco., std. ga.
Vulcan 30-ton, steam, saddle tank.
Vulcan 25-ton, steam, side saddle loco.
Vulcan 5-ton, std. gauge, gas.
Porter 12-ton, saddle tank, steam, 36" gauge.

RICHARD P. WALSH CO.

30 Church St. New York, N. Y.
Telephone: Cortlandt 7-0723 Cable: RICHWALSH

FOR SALE

25 ton Orton Locomotive Cranes, new
1942, oil fired, 65' boom.
25 ton Ohio Locomotive Crane, gasoline
powered, 55' boom, overhauled.
45 ton Davenport Diesel Elec. Locomo-
tive, new 1942.
35 ton Plymouth Gas Locomotive, new
1943.
20 ton Insley Steel Guy Derrick and
Hoist.
25 ton Wiley Steel Stiffleg Derrick, new.
475 HP Fairbanks Morse 8 cyl. Diesel
Engine.
120 HP Atlas 6 cyl. Diesel Generator
Set.
30 x 42" Pioneer Jaw Crusher, new.

MISSISSIPPI VALLEY EQUIPMENT CO.
515 Locust St. St. Louis 1, Mo.

FOR SALE! Good Used Equipment

- Kilns • Dryers
- Hammer Mills
- Screens—Sifters
- Magnetic Separators
- Crushers • Mills
- Condensers
- Tube Mills
- Raymond Mills

Send Us Your List of
SURPLUS EQUIPMENT

FIRST

MACHINERY CORP.
157 Hudson St., N. Y. 13
Worth 4-5900

RELAYING RAIL

TRACK ACCESSORIES

MIDWEST STEEL CORP.

GEN. OFF.: CHARLESTON 21, W. VA.
WAREHOUSES: CHARLESTON, W. VA.
KNOXVILLE, TENN. - PORTSMOUTH, VA.

RAILS

New and relaying. Also frogs, switches,
tie plates, angle bars, track accessories.

M. K. FRANK

480 Lexington Avenue, N.Y.
Also Pittsburgh, and Reno, Nevada

RAILS NEW AND RELAYING

TRACK ACCESSORIES

from 5 Warehouses

L. B. FOSTER COMPANY

PITTSBURGH - CHICAGO - NEW YORK

For Sale

RAYMOND LOW-SIDE MILL

4 Rolls. A-1 condition. In use less than 250 hrs.
Mill equipped with No. 11 Special Raymond Ex-
hauster, Pneumatic Feed Control and new Draft
Gauge. Does not contain any piping or cyclone
collector. Priced for quick sale by owner \$4,250.00
as-is, where-is, Kansas location.

MID-CO PRODUCTS COMPANY

1013 Grand Ave. Kansas City 6, Mo.

For Sale

CUMMINS DIESEL ENGINE

6 Cylinder—Model H.I.P.-600-C, Twin
Disc Clutch, Electric Starter. 160 HP at
1800 R.P.M. Excellent operating condi-
tion.

FRED R. MCKENZIE & CO.

Fulton, Illinois

DIESEL GENERATOR

1—Diesel Generator set, 300 HP. Fair-
banks-Morse Diesel, 6 cylinder, Model
32, complete with auxiliaries, 257
RPM, direct connected to 250 KVA.
3/60/480. And others.

AIR COMPRESSORS

1—Ingersoll-Rand Duplex Air Compres-
sor. Type XB, 582 cut. ft. motor
driven.

COOLERS AND DRYERS

1—10'x90' Rotary Cooler
8—Rotary Dryers—5'6"x32'5"
20—Rotary Dryers—4'6"x29'7"
10—Rotary Dryers—4'11"x54"
3—Rotary Dryers—5'6"x32'

CRUSHERS

2—No. 5 Gates Gyratory Crushers, style
D. Others various types and sizes.

CEMENT KILN GUNS

2—Remington-Arms Cement Kiln Guns

KILNS

Various sizes and types

LOCOMOTIVES AND CARS

1—4-Ton Vulcan Iron Works, Class AW-
4, worm gear Gasoline Locomotive,
36" gauge.
6—5 yard Koppel 2-way Dump Cars,
36" gauge.

HAMMER MILLS

Various sizes and types

DRILLING EQUIPMENT

1—No. 33 Ingersoll-Rand Leyner Drill
Sharpener
1—Improved type No. 22 electric power
Loomis Machine Company Clipper
Drill, complete with motor.
2—Ingersoll-Rand D.C.R. No. 430 Drills
2—Denver-Gardner Company (Turbo-
Waugh) No. 37 Drills
4—Denver-Gardner Company (Denver-
Waugh) No. 95 Drills

FEEDERS

2—Bailey Pulverized Coal Feeders, Type
No. 2

GRINDING EQUIPMENT

3—5½"x20' F. L. Smith Tube Mills
1—5'x22' Tube Mills
1—5'x10' Tube or Ball Mill

ELECTRIC MOTORS AND M.G. SETS
Large stock, rebuilt, AC or DC, 25 and
60 cycle

TRACK SCALE

1—Homestead (Carnegie-Illinois Steel)
Standard Track Scale, 46"—100 ton
capacity, complete

TURBINE

1—100 HP Westinghouse Turbine, 2700
RPM direct connected to 100 HP
Westinghouse Gear Reducer, ratio 3
to 1

AIR RECEIVER

ROTARY SCREEN

1—58"x20' with component parts

PULLEYS

1—Used Conveyor head pulley 28" face
x 48" diam. and drive
1—Used Conveyor tail pulley 28" face
x 42" diameter

CONVEYOR SCREWS

135 ft. 12" diameter
150 ft. 14" diameter
42 ft. 16" diameter

WEBBER

EQUIPMENT CORPORATION

17 EAST 45th ST. MU. 2-6511
NEW YORK 17, NEW YORK

Complete Good Roads portable Crushing Plant
Champion No. 6. Capacity 20 tons per hour
Two 24x36" Blake type Jaw Crushers, mang. fitted
10x40" Good Roads roller bearing Jaw Crusher
24x16" Rogers, 15x24" Traylor Jaw Crushers
Two No. 322 Allis-Chalmers type R Gyratory
Crushers

Denver Iron Wks. 15x36" dbl. roll smooth Crusher
Pioneer 30x18" dbl. roll crusher with motor
Allis-Chalmers Superior 54x24" dbl. roll Crusher
Barber-Greene Bucket Loaders Model 42
¾ yd. Link-Belt Speeder Shovel & Dragline
¾ yd. Model 206 & 1¼ yd. 650 P&H Shovels
1 yd. Marion Elec. Shovel type 7 440V AC
1 yd. Bucyrus-Erie Shovel 150 HP Cummins Diesel
Engine

NEW Iowa heavy duty Rock Feeder 42"x10"
Two 66"x18" HRT Rollers 150 lb. pressure
24"x65" Jeffrey chain Bucket Elevator, buckets
24x14x17"
150 KW 240 V AC Caterpillar
33 ton Elec. Battery Locomotive std. ga.

MID-CONTINENT EQUIPMENT CO., INC.

710 Eastgate Pa. 2290 St. Louis 5, Mo.

LIQUIDATION!

Marysville, Utah

- 1—Allis-Chalmers Rotary Kiln 7'6" dia. x 130' long, 5/8" shell.
- 1—Allis-Chalmers Rotary Kiln 7'6" dia. x 66' long, 5/8" shell.
- 1—Allis-Chalmers Rotary Kiln 7'6" dia. x 64' long, 5/8" shell.
- 1—Allis-Chalmers No. 5 Superior McCully Crusher, 10" opening.
- 1—Set of Allis-Chalmers Type "B" 36"x 16" Crushing Rolls.
- 1—Trommel Rotary Screen 4'x 8'.
- 1—Kennedy 3'x 6' Screen.
- 2—Continuous Open Bucket Elevators, 25' and 35' centers.
- 4—Chain Bucket Elevators, 20' to 40'.
- 50' of 9" Screw Conveyor.

Send for Complete Bulletin

AT OTHER LOCATIONS

- 1—Hardinge Conical Ball Mill, 2'x 8".
- 1—16" Troughing Idler Belt Conveyor, 175' long.
- 1—6'x 27'6" Steam Tube Dryer.
- 4—Oliver 8'x 6' Rotary Hopper De-waterers. NEW.
- 8—Tyler, Leahy, Link Belt, Rotex Screens 2'x 5', 3'x 5', 4'x 5', 3'x 6'.
- 1—Williams No. 1 Hammer Mill, requires 25 HP motor.
- 8—Tyler Ro-Tap Testing Sieve Shakers, with 1/4 HP motors.
- 1—5 1/2' dia. x 40' long Rotary Dryer, 1/4" shell.
- 1—Traylor 7 1/2'x 51' Lime Cooler.
- 1—10'x 90' Rotary Cooler.
- 2—Marcy Rod Mills, 4'x 10', 5'x 10'.
- 1—Dixie Type Premier Junior Non-Clog Hammer Mill, Size 2424.
- 3—Patterson Ball and Pebble Mills, 5'x 4', 6'x 5', 6'x 8'.
- 2—Steel Housing Bucket Elevators, 50' centers.
- 1—Sturtevant 30"x 16" Crushing Roll.

Partial List Only — Send for Complete Listing

BRILL

EQUIPMENT COMPANY
225 West 34th St.
New York 1, N.Y.

FOR SALE

Concrete Burial Vault and Septic Tank Plant—Complete.

For Details Write

A. C. MILLS

P. O. Box 635 Southport, Conn.

For Sale

One Mobilift fork-lift one-ton capacity used nine months, perfect condition, \$1400.00 Boise, Idaho.

MORTARLESS BLOCK COMPANY

904 No. 27th St. Boise, Idaho

FOR SALE

CONVEYORS Pan 24"x14' and 18"x30', complete as units with sprockets and gears.

LOADER, Box car with 5 HP 280 Volt motor.

TANKS, 8' dia x 30', 8'6"x11'x7'6" deep with double tapered outlet, and 7'4" square with tapered outlet.

STOKER, Iron Fireman size 4D long, with new tuyeres.

DRILL, D73 Gardner-Denver Dry Drifting with column. (New)

CRUSHER CONCAVES, for 7 1/2 Jates gyratory (New).

CARS, 35 two-way side dump, 1 1/2 yard, 24" gauge.

HOIST, Orr & Sembauer 24" dia x 20" drum.

PULVERIZER, K-B Hammermill, 12"x 24" size No. 1.

PULVERIZER, 33" Fuller-Lehigh Air Swept Mill, complete with blower, collector, and piping.

WEIGHT RECORDER, Streeter-Amet with track scale lever system, 12,000 lbs. capacity.

G. & W. H. CORSON, INC.

Plymouth Meeting, Pa.

For Sale—

SHASTA DAM AGGREGATE PLANT AND CONVEYOR EQUIPMENT

INCLUDING:

1800—36" CHAIN BELT TROUGHING IDLERS.

LATE MODEL GE MOTORS, 200 HP., 1800 RPM., 2300/4000 VOLT, SLIP RING; COMPLETE WITH INTERLOCKING CONTROLLERS.

WESTERN GEAR REDUCERS, 200 HP., 40 TO 1 RATIO, HERRINGBONE GEARS.

8' x 12' MARCY ROD MILL, COMPLETE WITH DRIVE AND SPARE SET OF NEW MANGANESE LINERS.

DORR HYDROSEPARATOR, 20' x 4', COMPLETE WITH DRIVE UNIT.

8", 16" AND 20" DEEPWELL TURBINE PUMPS AND ONE 3" x 4" TWO STAGE HIGH HEAD CENTRIFUGAL PUMP, ALL COMPLETE WITH MOTORS.

30" RODINSON TRIPPER AND TRESTLE.

COLUMBIA CONSTRUCTION CO., INC.
Box 579 Redding, California

FOR RENT OR SALE

20 and 30 yd. air operated side dump cars—drop door and lift door types.

17 1/2 ton and 30 ton rebuilt steam locomotive cranes.

1 25-ton Davenport steam saddle tank locomotive.

1 Jorden spreader.

The Latest in Concrete Block Plant Equipment

CLAPP RILEY & HALL
COMPANY

14 N. Clinton St.

Chicago 6. Ill.

For Sale

1—used Multiplex Five Block Machine, makes size 16"x16" blocks, with 45 pallets. 6" and 8" smoke pipe holes. Available Dec. 1, 1946.

ALBERT C. SHEPECK

Menominee, Mich.

GYRATORY CRUSHERS: All sizes and types.

JAW CRUSHERS: Traylor 36 x 42, capacity 6" material 144 tons per hour, 4" material 76 tons per hour, manganese fitted, excellent condition. Also, sizes 12 x 24 to 48 x 60.

ROLL CRUSHERS: Double Roll, Allis-Chalmers 24 x 54" dia.; 18 x 42" dia.

DRAG SCRAPER: Sauerman 1 yd. capacity with Crescent drag scraper bucket, 60 H. P. gasoline powered, 2 speed, hoist, all cables, blocks, etc.

DRYERS: 2—Ruggles Coles, double type construction, outside tubes 8'8" dia., 75' long, 3/4" thick shell. Inside tubes 8'6" dia., 3/4" thick shells. Complete with drive but without motor; in condition comparable with new.

VIBRATOR FEEDERS: Jeffrey Traylor 6'x 6', open pan deck, powered by four No. 5 heavy M-4 motors, including motor generator equipment for 440 volt, 3 phase, 60 cycle, operation; capacity 1500 tons of earth and stone per hour, maximum size stone 3' cubes.

1—48"x 10' with two 58M, 4 power units.

HAMMER MILL: Dixie Mogul size 5024, with \$1000.00 worth of new extra wearing parts.

ELECTRIC MINE HOISTS: 1—Single drum 10' dia., 7' face, 450 H. P. 1—10' dia., 10' face, 450 H. P. Each complete with all auxiliary equipment.

TUGGER HOIST: Sullivan 3 drum, 60 H. P., 440 volt.

KILNS, COOLERS, DRYERS: 1—7'6"x 100' and 1—6'6"x 120', with or without all necessary auxiliary equipment. 1—10' x 90' cooler or dryer. Also, several other sizes.

BALL MILL: 6' dia. x 10', with 200 H. P. motor, V-belt drive.

LOCOMOTIVE — GAS: 25 ton, standard gauge, air brakes, etc.

LOCOMOTIVE—STEAM: 1—Lima 80 ton 6 wheel, Switcher with tender, thoroughly modern, excellent condition. Sale or rent.

SCRAPERS: Tractor drawn, hydraulically operated; one Continental 7 yd., tires 1600 x 20; one Bucyrus 6 yd. and one 3 yd.

VIBRATOR SCREENS: 2—Allis-Chalmers, extra heavy, single deck, 5'x 14' with 10 H. P. motors, 440 volt, V-belt. Kennedy 4 x 8, 4 deck; 3 x 8, 3 deck. Telamith 3 x 10, 3 deck; 3 x 8, single deck. Jeffrey 48"x 78", single deck. Robins 4 x 6, 3 deck, with motor.

2—Robins, 4 x 12, heavy duty, single deck, Scalping Screens, style C-11, V-belt drive, without motor.

NEW CONVEYOR BELT: Large quantity 42" and 60" Conveyor Belt, 6 and 7 ply, 7/16" top cover, 1/16" bottom cover, 43 oz. duck, all New, Pure rubber.

DIESEL DRAGLINE: Lima 1201 with Cummins diesel motor, 80' boom, 18'11" cats, 42" treads, Koehler light plant, with 3 yd. and 3 1/2-yd. dragline bucket. Guaranteed condition, immediate delivery.

A. J. O'NEILL

Lansdowne Theatre Bldg.

LANSDOWNE, PA.

Phila. Phones. Madison 8300-8301

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your inquiries.

V. M. NUSSBAUM & CO.

FORT WAYNE, IND.

FOR SALE

6—S 40 Jackhammer Drills, \$100.00 each.

1—4" Centrifugal Manganese Sand pump on bed plate, \$150.00.

1—15 ton Standard Gauge, Porter Steam Locomotive (10x14) \$2500.00.

PALMETTO QUARRIES COMPANY

Columbia, South Carolina

FOR SALE

AIR COMPRESSORS

BELTED: 355, 528, 676, 1090, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1302, 1722 & 2200 Ft.
DIESEL: 698, 807, 1302, 1722 & 2200 Ft.
PORTABLE GAS: 110, 160, 230, 310, 540 & 1300 Ft.
STEAM: 49, 510, 528, 1300, 2200 & 3600 Ft.
CLAMSHELL BUCKETS, SKIPS & GRAPPLES
Over 8 A & H Stone Grapples
2 Yd. OWEN Type S Material Handling
1 1/2 yd. 1 yd., & 3/4 yd. Hayward Class E.
18 Steel Skips 6 1/2 x 10 x 7 1/2
5 Ton Bucyrus Rock Grabs.

CRANES AND DRAGLINES

1-16 Yd. 160' Boom Electric Caterpillar Dragline.
3/4 Yd. 5 Ton O & S 30 Ft. Boom.
13 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

CATERPILLAR SHOVELS

2 Yd. Marion Steam Shovel.
3/4 Yd. 1 1/2 Yd. 2 Yd. & 4 Yd. MARION Electric
1 Yd. NORTHWEST Gas.
1 1/2 Yd. Lima Diesel.
1 1/2 Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120B Electric. Also 3 yd. Erie Elec.

DUMP CARS

46-KOPPEL 1 1/2 Yd. 2 1/2 Yd., V shaped.
15-3 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 in. Ga.
Std. Ga. 12 Yd., 16 Yd., 20 Yd., & 30 Yd.
Cap.
15-Std. Ga. 50 Ton Battleship Gondolas.

BOX, FLAT & TANK CARS

9-50 ton std. ga. heavy duty flat cars.
20-8000 gal. cap. tank cars.
30-40 ton std. ga. box cars.

HOISTING ENGINES

Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6 1/2 x 8, 7 x 10, 8 1/2 x 10, 10 x 12, 12 x 24.
DIESEL UNITS
75, 90, 120, 200 HP. F. M. Engines.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.
345 KW Fairbanks-Morse 3/60/480 V.
4-500 KW Baldwin 3/60/440 V.

BALL, ROD AND TUBE MILLS

5' x 22" HARDINGE CON. Dry Ball Mill.
6' x 22" HARDINGE CONICAL Pebble Mill.
6' x 22" HARDINGE CONICAL Ball or Pebble Mill.
4' x 16" & 10' x 20" Straight Ball Mills.
4' x 16" & 5' x 22" Tube Mills 6' x 22".
3 1/2' x 8" & 5' x 7" Air Sifted Tube Mills.
2 1/2' x 6" & 3' x 12" ROD MILLS.

PULVERIZERS

JEFFREY 24x20 & No. 8 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 6000, 0 & 3.
STEEL STORAGE TANKS
10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.
SEPARATORS AND COLLECTORS
8, 10 and 14 ft. Separators, Gavco & Bradley.

ROLL CRUSHERS

36x60 Fairmont & 36x20 Diamond.
JAW CRUSHERS
10x8, 13x7 1/2, 14 1/2, 15x9, 16x10, 16x9, 16x12,
18x10, 18x11, 20x9, 20x8, 20x10, 20x12, 26x12,
30x15, 30x13, 36x15, 36x30, 36x18, 36x14, 36x9,
36x8, 36x10, 36x24, 42x9, 48x24, 48x36, 60x42,
60x66, 60x16, 9x36.

CONE AND GYRATORY CRUSHERS

5 No. 19, 25, 37 & 49 Kennedy.
18 in., 24 in., 30 in., 36 in., & 48 in. Symons Disc.
4-10 TZ Traylor 4 ft. Gyratory.
4-No. 5, 3 & 6 Austin Gyratory.
5-Traylor T-12 Banded Gyratory, also 16 inch
5 in. Traylor T. Gyratory.
17 Gates K-Nos. 3, 4, 5, 6, 7 1/2, 8, 9 1/2 & 21.
7-Symons Cone, 2, 3, 5 1/2 and 7 ft.
6, 10 & 15 inch Superior McCullys.

CONVEYOR PARTS

BELT: 1000 Ft. 60 in., 700 Ft. 40 in., 600 Ft. 26
in., 800 Ft. 30 in., 1642 Ft. 24 in., 517 Ft. 12
in., 297 Ft. 18 in., 500 Ft. 16 in., 300 Ft. 14
in.
IDLERS: 54 in., 42 in., 36 in., 30 in., 24 in.,
20 in., 18 in., 16 in. & 14 in.
Head & Tail-Pulleys-Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 in., 30 in., and 36
in. Sections.

ROTARY DRYERS AND KILNS

36 in. x 20 Ft. 3 Ft. x 30 Ft. 4 Ft. x 30 Ft., 54 in.
x 30 Ft. 42 in. x 24 Ft. 5 Ft. x 30 Ft. 5 Ft. x 16
Ft. 5 Ft. x 60 Ft. 6 Ft. x 60 Ft. 6 Ft. x 30 Ft.,
6 Ft. x 70 Ft., 10x20, 7 1/2 x 100 & 8 x 110 Ft. Kilns.

STEEL DERRICKS

GUY: 3 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom,
20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft.
Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft.
Boom.

LOCOMOTIVES

GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 15 Ton, 30 Ton, & 65 Ton.

SCREENS

VIBRATING: 2x4, 3x6, 12x28, 3x8, 3x5, 4x5, 4x8,
4x10, 4x12 & 4x12, 1, 2 & 3 Deck.
HUMMER ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3 1/2 x 18, 3x24, 4x16,
4x20, 4x24, 5x30, 5x30, 5x30.

R. C. STANHOPE, INC.

Complete Plants Bought and Sold
60 East 42nd Street, New York 17, N. Y.

FOR SALE

51B Bucyrus-Erie Electric combination crane, shovel
and dragline in working condition complete
with buckets, fair-lead, boom and spare parts.
Offered where is, as is, located at St. Cloud, Minn.

SHIELY-PETTERS CRUSHED STONE CO.
P.O. Box 169 St. Cloud, Minn.

COACH SAID USE A FLYING TACKLE ON THAT BIRD



STATIONARY COMPRESSORS

2-754 cu. ft. Chicago Pneum. Model OCB 2-stage
Compressors, size 17x10x12. Power 150 HP AC
elec. motor.
1-660 cu. ft. Sullivan angle compound Compressor,
Model WJ3, size 17x10 1/2 x 12. Power 150 HP
AC elec. motor.
1-511 cu. ft. Chicago Pneum. Compressor, Model
OCB, size 15x9x10. Power 150 HP AC elec.
motor.

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas
power, sizes from 20 cu. ft. 1,000 cu. ft.

CRUSHERS

1-Acme Style D No. 9 1/2 Jaw Crusher, with screen,
elevator and gas eng., 12 to 18 tons per hour.
1-9 1/2 x 24" United Iron Works Jaw Crusher.
1-12x20" Acme Road Machinery's Jaw Crusher,
Ser. No. 1875, Style A.
1-9x16" Climax Jaw Crusher No. 2.
1-9x16" Acme Jaw Crusher No. 1686, size 8 1/2 A.
1-9x18" Sawyer Massey Jaw Crusher.
1-No. 5 Allis-Chalmers Gyratory Crusher No.
5331, size 10x35".
1-No. 5 Austin Gyratory Crusher, Ser. No. 2945,
size 12x35 1/2".

DERRICKS

4-Steel guy derricks, 2-20 ton American steel
guy derricks, 110' masts, 90-100' booms, 1-
15 ton American steel derrick, 35' mast, 75'
boom, 1-5 ton Terry Guy Derrick, 70' mast,
60' boom.
13-Stiffing derricks, 1-6 1/2 ton Inslay, 64' mast,
70' boom, 16-30 ton BRAND NEW Wiley
Derricks, 30' masts, 60' booms, 1-15 ton All.
Steel derrick, 25' mast, 90' boom.

Partial List Only—Send For New Stock List Just Published
All equipment is owned by us and may be inspected at one
of our plants.

WE BUY—REBUILD—SELL AND RENT

— Chicago 12 —
1119 So.
Washtenaw Ave.
Pittsburgh 30
P.O. Box 933
Dept. RP

Philadelphia 2
1511
Race St.
NEW YORK 7
30 Church St.
Dept. RP

You can get anything from a
sheave to a power shovel at
E. C. A. Dependable equip-
ment for any job—for SALE or
RENT.

HOISTS (Electric, Gas, Steam)

85—Electric, ranging from 30 H.P. up to 125 H.P.
consisting of triple-drum, double-drum and
single drum, with AC or DC motors, some with
attached swingers. Following makes: American,
Clyde, Lambert, Lidgerwood and National.
Gas hoists ranging from 5 to 120 H.P., single,
double and triple-drum all standard makes
(36 in stock).
Steam, ranging from 5 H.P. to 60 H.P., single,
double and triple-drum; all standard makes.

PNEUMATIC TOOLS

Column Drifters and Tripods
4—Model 17 Denver rock drills.
3—Sullivan high-speed drills, Model FG-3.
6—Ingersoll Rand type X71 drifters.
4—Gardner Denver drills with drifter mountings.

JACKHAMMERS

8—Jackhammers, consisting of Hardco, Worthing-
ton and Cleveland, 45 lb. and 85 lb. class.
4—Ingersoll Rand Model BCR-430 Jackhammers,
47 1/2 lb.
1—No. 3 Hardco 50 lb.

WAGON DRILLS

2—Gardner Denver derrick drills with Model 21
Gardner Denver drill; will drill 30 ft.
1—Ingersoll Rand drill, size D, with utility air
hoist and Ingersoll Rand X71 drill.
1—Ingersoll Rand Model FM-2 drill, with Inger-
soll Rand air hoist, size X71 drill, mounted on
pneumatic tires; will handle 30 ft. steels.
2—Ingersoll Rand; Model FM-2, with air hoist
and IX71 drill mounted on 3 steel wheels;
will handle 20 ft. steels.
1—Ingersoll Rand drill No. 3122, with X71 drill,
mounted on 4-wheel trucks; will drill up to
36 ft. deep holes.

WE ALSO HAVE A LARGE STOCK OF DRILL
STEEL WITH MISCELLANEOUS TIMKEN
BITS.

PUMPS

We have a large stock of centrifugal pumps, gas
and elec. powered from 1 1/2" to 10". Also Dredg-
ing and vertical pumps.

EQUIPMENT
CORPORATION
of AMERICA.

LOCOMOTIVES - CRANES

1-80-ton Baldwin 0-6-0 separate tender
switcher, built 1925. A.S.M.E. boiler,
piston valves, Walschaerts valve gear,
overhauled and up to date on all
I.C.C. requirements.

1-20-ton Whitcomb Diesel-Mechanical
36" gauge locomotive, four wheel type.

2-20-ton gasoline locomotives, 4 wheel
type, built 1941 and 1942, overhauled,
standard gauge.

1-American "Gopher" Crawler crane,
gasoline, 1/2 yd. completely rebuilt.

1-Williams Clamshell digging bucket,
1 yd. capacity, heavy duty type with
teeth, practically new condition.

Birmingham Rail & Locomotive
Co.

BIRMINGHAM 1, ALABAMA

FOR SALE

One lot of sand and gravel dredging
equipment recently removed from ladder
dredge. This equipment consists of con-
veyors, steam engines, pumps, manga-
nese buckets, chains, etc.

STANDARD SAND & GRAVEL CO.
34th & Market Sts. Wheeling, W. Va.

A Dependable Source For

HEAVY EQUIPMENT

We Welcome Your Inquiries

B. M. WEISS CO.

Girard Trust Co. Bldg.
Philadelphia 2, Pa.

FOR SALE

FOR SALE

One Barber-Greene model 42-A bucket loader, A-1 condition. Reasonable.

W. E. MacMULLAN
Wellsville, Mo.

PLANTS WANTED

OPPORTUNITY!

We are a reputable principal

READY to **PAY YOU CASH**

For quick purchase on

INDUSTRIAL PLANTS—MFG. DIVS. or UNITS
(assets or capital stock)

FOR IMMEDIATE ACTION IN THE STRICTEST
CONFIDENCE ADDRESS:

Box No. 1209; 147 W. 42 St., New York 18, N.Y.
Personnel will be retained wherever possible.

WANTED

Concrete Block Plants complete or will pay cash for good used concrete machinery and equipment.

**AARON MACHINERY CO.,
INC.**

45 CROSBY STREET
NEW YORK 12, N. Y.

PLANTS FOR SALE

FOR SALE

Concrete Block & Pipe Co.
Completely Equipped with
Besser Super Vibra Pac
Machine
Universal Concrete Pipe
Machine
Lift Trucks
Dump Trucks
Scoopmobile

Write:
P. O. Box 313
Lewiston, Idaho

FOR SALE

COMPLETE OPERATING CONCRETE BLOCK
PLANT—Manufacturing 3-core 4x8x16 and 2-core
8x8x16 units. All power equipment. Plant established
one year—business is good—well trained
crew—no labor problem—producing 2000 standard
units per day. Modest stock steam cured units on
hand. Will return more than investment first year
net. Nearest competition 35 miles. Owner must
move account of health. For particulars and price
contact: SHUPTRINE'S CONCRETE PRODUCTS
Milledgeville, Georgia Telephone 4125

FOR SALE

Concrete Block Plant on 72,000 sq. ft. of land plus
buildings, fuel bins, railroad siding. 1-1 1/2 ton
truck, all manufacturing equipment and material
on hand. Chicago—south suburb. Price \$35,000.
Terms 1/4 cash.

Write Box E-29, c/o Rock Products,
309 W. Jackson Blvd., Chicago 6, Ill.

**ROCK PRODUCTS Classified
Sells in a Hurry . . . TRY IT!**

BUSINESS OPPORTUNITY

FOR SALE OR LEASE

**Sand and Gravel Property
Near Washington, D. C.**

50 acres or less 2 miles from east
line of the District of Columbia in
Maryland containing up to 50 feet
depth, with about 60 percent gravel,
high grade, passed Federal, District
of Columbia and Maryland specifications;
bank run or easily washed;
water available. Expanding
market. Excellent opportunity for
profitable operation. Will consider
offer for quick sale or lease.

INDURATED CONCRETE CORPORATION
1852 Columbia Road
N. W. Washington, D. C.

MINERAL COLORS

MINERAL COLORS

for
**BRICK MORTAR
STUCCO—PLASTER**

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

CONSULTING CHEMIST

HORACE J. HALLOWELL

Analytical and Consulting Chemist
323 Main St. Danbury, Conn.
Specialty—The Chemical Analyses
of Carbonate, Phosphate and Silicate
Rocks and Mineral Products.

CONSULTING ENGINEER



CORE DRILLING

ANYWHERE

We look into the earth
**PENNSYLVANIA
DRILLING COMPANY**
Pittsburgh, Pa.

GLENCO ENGINEERING ASSOCIATES

Specialists in the Design and Construction
of Cement, Lime, Sand & Gravel,
Ready Mix Plants.
P. O. Box 204, Roslyn, N. Y.

H. D. RUHM

Consulting Engineer
PHOSPHATE

305 W. Seventh St.
Columbia Tenn.

W. R. BENDY

312 TIMES BUILDING
LONG BEACH, CALIF.

Cement Plant Engineering

**Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs**

E. LEE HEIDENREICH, JR.

Consulting Engineer
67 Second Street, Newburgh,
N. Y.
Phone 1828

**Operation
Plant Layout
Design
Appraisals
Construction**

POSITIONS VACANT

Cement Plant General Foreman Wanted

Established portland cement company desires to secure services of competent general foreman, experienced in operating equipment and in handling men. Work involves planning and supervising details of plant operation. In reply, give personal information and experience. All inquiries strictly confidential.

Write Box E-19, c/o Rock Products,
309 W. Jackson Blvd., Chicago 6, Ill.

HELP WANTED

Plant Superintendent for modern Rock and Sand Plant in Los Angeles, Calif. Good opportunity for man with experience and ability who can get maximum production and maintain quality of equipment. Answer must give complete details of past employment, education, age, salary expected, and general description of yourself with a recent photo.

Write Box E-17, c/o Rock Products,
309 W. Jackson Blvd. Chicago 6, Ill.

DESIGNERS, checkers and draftsmen. Men with three or more years industrial experience designing high-speed, rotating, heavy machinery are needed for positions vacant due to expansion by large machinery manufacturer in Lake Michigan area. Write Box E-24, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

POSITIONS WANTED

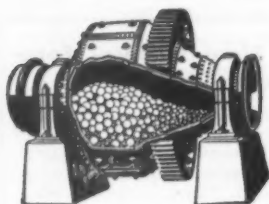
EXECUTIVE—43, owner and manager of large concrete products plant has sold out all interests and is available for plant manager, production supt. or will purchase interest in going concern handling and mfg. concrete blocks, building supplies, etc. Prefer Virginia, North or South Carolina, Florida or Georgia territory. Write all details to Box E-22, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CONSTRUCTION ENGINEER and superintendent, with twenty years experience in highway, public works and building construction fields, is desirous of locating in southwest U. S. Also interested in connection in the manufacture and/or sales of ready-mixed concrete, building materials and building specialties. Recently separated from Army as Lt. Colonel. Married. Age 40. Write Box E-5, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

Available after Dec. 1st 1946. Cement Plant operating mill foreman or chief electrician. 28 years experience in both wet and dry process. 18 years as construction and operating chief electrician, 10 years as operating mill foreman. Write Box E-23, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

PLANT SUPERINTENDENT available January 1st. Graduate Engineer with 25 years experience in construction of Pipe Lines and manufacturing of pipe and block. Location desired, Middle West. Write Box E-12, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

FORMER ARMY MAJOR with twenty years' experience as chief chemist and assistant chief chemist in modern cement plant desires a position, preferably the west coast. Am willing to go to Mexico or South America, if inducement is satisfactory. Write Box C-95, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.



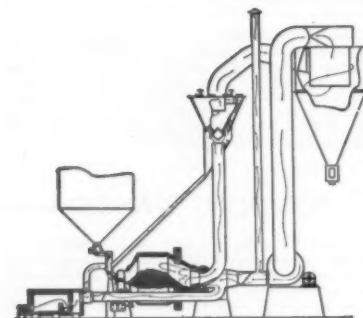
CONICAL MILLS
(Ball and Pebble)



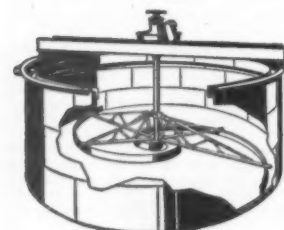
**RUGGLES-
COLES
DRYERS**



**COUNTER-
CURRENT
CLASSIFIERS**



**HARDINGE
THERMOMILLS**



**"AUTO-RAISE"
THICKENERS**

Profitable Operation . . .

FIRST CONSIDERATION OF THE
OPERATOR IS ALSO FIRST CONSIDERA-
TION OF THE MANUFACTURER OF
THESE DEPENDABLE LINES . . .
PROVED WHEREVER THEY
ARE IN OPERATION TODAY

Write for Catalogs

HARDINGE

COMPANY INCORPORATED
YORK, PENNSYLVANIA — 240 Arch St. • Main Office and Works
NEW YORK 17—122 E. 42nd St. • 205 W. Wacker Drive—CHICAGO 6
SAN FRANCISCO 5—501 Howard St. • 200 Bay St.—TORONTO 1

INDEX TO DISPLAY ADVERTISERS

Allis-Chalmers Tractor Div. . 48	International Harvester Co. . 29
American Air Filter Co. 156	Iowa Mfg. Co. 14, 15
American Chain & Cable Co., Inc. Inside Back Cover	Jackson & Church Co. 129
American Cyanamid Co. 96	Jaeger Machine Co. 105
American Pulverizer Co. 110	Joy Manufacturing Co. 4
Anchor Concrete Machy. 133	Kennedy-Van Saun Mfg. & Eng. Corp. 12, 13
Appley, J. W. & Son. 134	Kent Machine Co. 123
Atlas Steel Const. Co. 136	Knox Mfg. Company 104
Babcock & Wilcox Co. 140	Koehring Co. 24
Barber-Greene Co. 16	LaPlant-Choate Mfg. Co. . . 27
Baughman Mfg. Co. 137	Laughlin, Thomas, Co. . . . 98
Berg Vault Co. 134	Leschen, A., & Sons Rope . . 112
Besser Mfg. Co. 120	Link-Belt Co. 141
Blatt, Frank I., Sales. 135	Ludlow-Saylor Wire Co. . . . 22
Blaw-Knox Co. 141	McLanahan & Stone Corp. . 142
Bonded Scale Co. 138	Mack Trucks, Inc. 95
Brooks Equipment & Mfg. . . 110	Macwythe Co. 106
Bucyrus-Erie Co. Outside Back Cover	Magnesium Alloys 136
California Wire Cloth Corp. . 18	Manhattan Rubber Div. . . . 142
Carver Pump Co. 155	Marion Power Shovel Co. . . 33
Chase Fdry. & Mfg. Co. . . . 136	Master Builders Co. 119
Chevrolet Motor Div. 10, 11	Mortarless Tile Mach. Co. . . 134
Chicago Perforating Co. . . 140	M-R-S Mfg. Co. 6
C. I. T. Corp. 35	Multiplex Concrete Machy. . 130
Cleveland Wire Cloth & Mfg. 142	New Holland Machine Co. . . 98
Combustion Eng. Co., Inc. . . 17	Nordberg Mfg. Co. 24
Commercial Shearing & Stamping Co. 136	Owen Bucket Co. 142
Continental Gln Co. 139	Pennsylvania Crusher Co. . 141
Darden, Roy, Industries 116, 117	Pioneer Eng. Works 24
DeLaval Steam Turbine Co. . 20	Pipkin-Wilson Mfg. Co. . . . 136
Dempster Brothers, Inc. . . . 37	Portland Cement Assoc. . . . 135
Denver Equipment Co. 106	Pressed Steel Car Co. 112
Detroit Diesel Engine Div. . . 8	Prima Products, Inc. 127
Dixie Machinery Mfg. Co. . . 143	P & S Airplane & Implement Tire Co. 138
Dodge Division. 36	Raymond Pulv. Div. 17
Dodson Mfg. Co., Inc. 140	Reed, R. S. Corp. 134
Duncan Machine Works. . . . 136	Resisto-Loy Co. 32
Eagle Crusher Co., Inc. . . . 105	Ryerson, J. T., & Son, Inc. . 104
Eagle Iron Works. 99	St. Regis Paper Co. 21
Edgar's Block Mach. Wks. . . 133	Sauerman Brothers, Inc. . . . 102
Ehrsam & Sons Mfg. Co. . . . 143	Screen Equip. Co., Inc. . . . 103
Ensign-Bickford Co. 44	Simplicity Engineering Co. . 39
Erickson Special Equipment Mfg. Co. 134	S K F Industries, Inc. . . . 25
Farrel-Bacon Co. 132	Smldth, F. L., & Co. 41
Firestone Tire & Rubber. . . 93	Smith Eng. Works 23
Florida Die Casting Fdry. . . 134	Southeast Steel Sales Co. . . 133
Ford Motor Co. 46	Standard of California . . . 50
Fuller Company 28	Standard Metal Mfg. Co. . . 138
Furnival Machinery Co. . . . 138	Stearns Mfg. Co., Inc. . . . 131
Gates Rubber Co. 30	Stoddy Co. 3, 101
General Motors 8	Sullivan Division 4
George, F. C., Machine Co. . 118	Texas Company 54
Goodrich, B. F., Co. 1	Thermoid Rubber Div. . . . 42
Goodyear Tire & Rubber . . . 9	Trackson Co. 100
Graveley, Bob, Industries . . 132	Traylor Eng. & Mfg. Co. . . 7
Gruendler Crusher & Pulv. . . 112	Tyler, W. S., Co. 138
Hammond Bag & Paper . . . 140	Union Pacific Railroad 38
Hardinge Co., Inc. 154	Universal Road Machy. Co. . 140
Harnischfeger Corp. 143	Universal Vibrating Screen . 111
Harrington & King Perf. . . 112	Upson-Walton Co. 5
Hayward Company 142	War Assets Admin. 109, 114
Hazard Wire Rope Div. Inside Back Cover	Wellman Engineering Co. . . 137
Hendrick Mfg. Co. 139	Wickwire Spencer Steel Div. . 18
Hetherington & Berner, Inc. 111	Willifey, A. E., & Sons, Inc. . 140
Highway Equipment Co., . . 31	Williams Patent Crusher & Pulv. Co. Inside Front Cover
Independent Pneu. Tool Co. . 19	Wisconsin Motor Corp. . . . 102

INDEX TO CLASSIFIED ADVERTISERS

Business Opportunity	153
Consulting Chemists	153
Consulting Engineers	153
Equipment Wanted	152
For Sale	144-153
Mineral Colors	153
Plants for Sale	153
Plants Wanted	153
Positions Vacant	153
Positions Wanted	153

Aaron Machy, Co., Inc.	153
Albert Pipe Supply Co.	145
Allstates Equipment Co.	147
Bacon-Pietsch Co., Inc.	146
Bendy, W. R.	153
Birmingham Rail & Loco.	151
Black White Limestone Co.	144
Blue Ridge Talc Co., Inc.	153
Bonded Scale Co.	145
Brill Equipment Co.	150
Brown Equipment Co.	144
Carlyle Rubber Co., Inc.	145
Cement Block Industries	145
Coast Equipment Co.	145
Cohen Equipment Co.	147
Columbia Const. Co., Inc.	150
Concrete & Cinder Blocks Products Co.	145
Corson, G. & W. H.	146, 150
Courchesne, A., Inc.	148
Douglas, H. R.	152
Elghmy Equipment 146, 147, 148	
Ellard & Co.	152
Equipment Corp. of Amer.	151
First Machinery Corp.	149
Fischer Lime & Cement Co.	144
Foster, L. B. Co.	149
Frank, M. K.	149
Friend, W. H.	152
General Traders	144
Gill, Clifford	152
Glenco Engineering Assoc.	153
Hallowell, Horace J.	153
Hawkins & Co.	152
Heat & Power Co., Inc.	148
Heidenreich, E. Lee, Jr.	153
Indurated Concrete Corp.	153
Iron & Steel Products, Inc.	144
Johnson & Hoeler, Inc.	147
Kaufman, G. W.	148
Kentucky Stone Co., Inc.	147
Kremser, Frank A., & Sons, Inc.	144, 152
Lime & Hydrate Plants Co.	147
McCarthy, H. A.	146
McCartney Machinery Co.	151
McKenzie, Fred R. & Co.	149
McLeod, Alexander T.	147
MacMullan, W. E.	153
Metropolitan Plumbing Sply.	148
Mid-Co Products Co.	149
Mid-Continent Equip. Co.	149
Midwest Steel Corp.	149
Mills, A. C.	150
Mississippi Valley Equip.	149
Mortarless Block Co.	150
Nussbaum, V. M., & Co.	150
O'Neill, A. J.	150
Palmetto Quarries Co.	150
Pennsylvania Drilling Co.	153
Perkins, P. R.	153
Riley, Clapp, & Hall Co.	150
Rogers Concrete Block Co.	144
Ruhm, H. D.	153
Schoonmaker, A. G. Co.	144
Shaw, J., Coal & Material	144
Shepeck, Albert C.	150
Shiely, J. L., Co.	152
Shiely-Petters Crushed Stone	151
Shuptrine's Concrete Prod.	153
Silica Products, Inc.	145
Standard Sand & Gravel	151, 152
Stanhope, L. M.	144
Stanhope, R. C., Inc.	147, 151
Thomasville Stone & Lime	152
Tractor & Equipment	144
Unverzagt, G. A., & Sons	146
Vermont Marble Co.	148
W. G. Block Co.	145
Walsh, J. T.	148
Walsh, Richard P., Co.	149
Warner Co.	152
Webb, A. E.	144
Webber Equipment Corp.	145, 146, 147, 149
Weiss, H. M. Co.	151
Western Cont. Sup. Co.	152

HERE'S ANOTHER REASON WHY CARVER PUMPS ARE BETTER



NON-RECIRCULATING
NON-CLOGGING
NON-QUITTING

Carver Pumps are offered with a choice of power and mounting in sizes from 1½" to 10". Write for catalog.



CARVER PUMP CO.
Muscatine, Iowa



...ANY ROCK PRODUCTS DUST CAN BE CONTROLLED WITH AAF EQUIPMENT

Roto-Clone is a registered trademark for a dynamic precipitator or hydrostatic battle-type wet collector.

Shown below are six of the principal American Air Filter dust control units used by the rock products industry. Complete engineering data and literature are available on the entire AAF line. If you have a dust problem, consult with us—there's no obligation. Meanwhile, write for complete descriptive bulletin.

PROCESS DUST CONTROL

ATMOSPHERIC DUST CONTROL

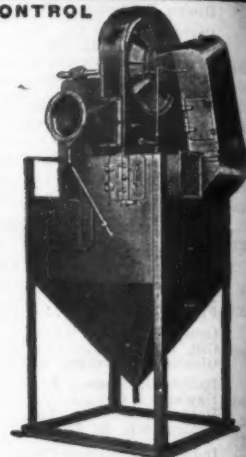


TYPE D ROTO-CLONE

A revolutionary advancement in process dust control—combines fan and dust collector in a single compact unit. More efficient than standard exhausters and cyclone separator which it replaces. Simplifies dust control, eliminates extensive piping and reduces cost of installation. Wide variety of types and sizes. Write for Bulletin No. 272.

TYPE W ROTO-CLONE

Combines the scrubbing effect of water sprays with principle of dynamic precipitation as employed in the Type D. Provides complete collection of finely divided materials, eliminating any possibility of a secondary dust problem. Collected material disposed of as sludge. Available in capacities up to 30,000 c.f.m. Write for Bulletin No. 274A.

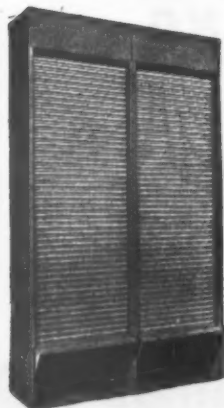


TYPE F ROTO-CLONE

Similar in principle to the Type D but of steel plate construction. Widely applied to cleaning of stock gases from boilers or kilns, and exhaust from large rotary dryers or coolers. Also used for dedusting, air cleaning and other systems requiring dust removal from large air volumes. Write for Bulletin No. 273.

TYPE N ROTO-CLONE

A hydrostatic collector with induced water scrubber. No moving parts, spray nozzles or pumps. Especially suitable for the collection of cementitious dusts. All interior surfaces readily accessible and when required can be economically protected against corrosion. Write for Bulletin No. 277.



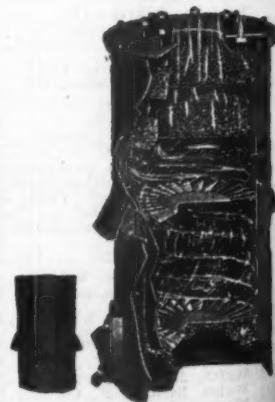
AAF AIR CLEANERS FOR ENGINE AND COMPRESSOR PROTECTION

Multi-Duty Filter

May be connected to serve several engine or compressor units at one time. The Multi-Duty is also recognized as the finest automatic air filter for air conditioning service. Choice of several types of filter curtains to meet any existing dust condition. Furnished in any size or capacity. Send for Bulletin No. 241A.

Cycoil Oil Bath Cleaner

Outstanding AAF air cleaner for engines and compressors. Takes care of extremely heavy dust concentrations. Employs a new 4-way cleaning principle by which air is pre-cleaned BEFORE entering conventional filter cell. The Cycoil and other AAF filters for similar services are described in Bulletin No. 130D.



AMERICAN AIR FILTER CO., INC.

107 CENTRAL AVENUE, LOUISVILLE, KENTUCKY
IN CANADA: DARLING BROTHERS, LTD.
MONTREAL, P. Q.

You can tell them by their "DOG-TAGS"



HAZARD'S

ACCO **Registered Slings** **are identified**

● Every American soldier wore metallic tags which bore his name, number, and military affiliation. Every Hazard Acco-Registered sling wears a metallic tag which shows its size, type, registered number, and its safe working load as pre-determined by a mill-applied load test of twice its rated capacity.

Hazard's Acco-Registered sling tags not only

identify the sling by name and number, but *constantly* tell your workmen the safe load it will carry. That's a safety precaution that *could* save a lot of money for you.

Get the full story of Hazard's Acco Wire Rope Sling registration and what it means to you, by writing for literature *now*. You will thank us for the suggestion, later.

ACCO

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.



HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE

In Business for Your Safety

"HOME" for a 120-B

Loading rip-rap rock in large doses, the 5-yard 120-B, like all Bucyrus-Erie quarry and mine excavators, is at home in tough digging all over the world. The strength, power, and dependability behind the high-speed digging cycle and perfect control mean high average production and economy over many years of service.

24L48C

**BUCYRUS
ERIE**

FOR
Sustained
HIGH PRODUCTION
AT
LOW COST

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE
WISCONSIN